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PRIMARY NURSING TECHNIQUE



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TORONTO

PRIMARY NURSING TECHNIQUE

FOR

FIRST-YEAR PUPIL NURSES

BY

ISABEL McISAAC

GRADUATE OF THE ILLINOIS TRAINING SCHOOL FOR NURSES; FORMERLY SUPER-
INTENDENT OF THE ILLINOIS TRAINING SCHOOL FOR NURSES; HONORARY
MEMBER OF THE BRITISH MATRONS' COUNCIL; CHARTER MEMBER OF THE
NURSES' ASSOCIATED ALUMNÆ OF THE UNITED STATES; MEMBER OF
THE AMERICAN SOCIETY OF SUPERINTENDENTS OF TRAINING
SCHOOLS FOR NURSES; A DIRECTOR OF THE AMERICAN JOUR-
NAL OF NURSING; A TRUSTEE OF MERCY HOSPITAL,
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Dedicated

TO

**THE CHARTER MEMBERS OF THE AMERICAN
SOCIETY OF SUPERINTENDENTS OF
TRAINING SCHOOLS FOR NURSES**

A TRIBUTE OF APPRECIATION

**TO THEIR MONUMENTAL LABOR IN BEHALF
OF AMERICAN NURSES**

ACKNOWLEDGMENT

I HAVE availed myself of the writings of my predecessors in the field of nursing, and desire to express my thanks also to Miss Sophia F. Palmer, Editor of the *American Journal of Nursing*, Miss Emma Jones, Superintendent of Nurses, Rochester City Hospital, and to my former pupils, Miss Jessie Breeze, Miss Katherine DeWitt, Miss Lila Pickhardt, and Mrs. Harriet Higbee, for their kind advice and criticism of the manuscript of this primer for young nurses.

CRANFORD FARM, July, 1907.

PREFACE FOR TEACHERS

THE design of this small text-book is to give the pupil nurse at the beginning of her training simple definite instruction in technique.

Curricula for preliminary courses suitable for the varying conditions of hospitals and schools have frequently appeared in print, notably the one suggested by the New York State Education Department, which covers the minimum requirements of that state for registration; the one by Isabel Hampton Robb, in her great work on nursing; and in the yearly announcements of many large training schools for nurses.

The introduction of these preparatory courses for probationers has made it necessary to give pupils a considerable amount of teaching in nursing technique before they are intrusted with the actual care of patients.

Much of this first teaching may be and is best done by clinical demonstration, a method which teachers of nurses have been slow to adopt, but which when once tried is never abolished, and in most instances is elaborated and extended as far as possible according to the limitations of the hospitals and schools.

It is to be understood that pupils are to receive during their first year proper instruction in hygiene, anatomy and physiology, materia medica, dietetics, and medical and surgical nursing, *"all of these subjects to be taught in their relation to nursing, not to medical practice."*

Much criticism has been heard, unhappily only too often perfectly justifiable, upon the teaching of nurses. It lies within the province, and indeed should be felt the duty, of every teacher, to study into the causes of these defects, and rather than give pupils huge masses of indigestible information, to begin upon simple lines which will prove a strong foundation capable of carrying almost indefinite elaboration.

The provision that all subjects taught nurses should be "taught in their relation to nursing and not to medical practice," states concisely what has been one of the most obvious faults of much of our past teaching.

If every teacher of nurses were to bear this constantly in mind and to supplement every lesson with instruction in nursing ethics, a large amount of present criticism would die out from lack of material to feed upon. Again, it is not enough to teach the pupil how to do a thing; she should also be warned of the wrong ways of doing it.

No text-book can be compiled which will cover the whole ground in all its details, but as a child is taught to count, to add, to subtract, to multiply, to divide, and then to combine all in a thousand ways, so may we begin with such simple nursing duties as may be within the pupil's comprehension, and by degrees, both by theory and practice, add to her knowledge until she becomes a capable intelligent nurse.

It is the writer's opinion that as nearly as is possible in general hospitals pupils should receive their training, both theoretical and practical, in the following order: Medical, Surgical, Operating room, Gynecological, Contagious, Children, Obstetrical.

All of the details of medical nursing can or may be used in every other department, while all other depart-

ments have details which probably would never be used elsewhere.

The intelligent nursing of children and the lying-in need the whole range of medical and surgical nursing as a foundation, and the nursing of gynecological patients makes the same requirement, besides often presenting a peculiar ethical side, which only older nurses can grasp and meet.

In the private hospital the classification of patients is usually broadly made, which renders the above order of training difficult to accomplish; but very much more attention to order and system in training might be given in all of our schools.

It would require a very unusual mind to set in order and assimilate the masses of unrelated information which so often constitute the nurse's instruction. Much needs to be done, and easily might be done, to bring the theoretical and practical into proper relation. Too often they are separated by so sharp a line that theory seems suspended in mid-air while practice struggles awkwardly and inefficiently alone.

The arrangement of the following chapters should be regarded as flexible, lessons being assigned according to the daily work; thus keeping theory and practice hand in hand.

A few chapters have preparatory lessons suggested and certain reference books noted which have been found excellent by many teachers of nurses; but the subjects may be found in many other medical books, and it is an easy matter for the teacher to outline the lesson upon a bulletin board and let the pupil search for the subject material herself. Every reference library for nurses should have its contents listed, classified, and

posted, that pupils may know where to look for collateral reading.

It is the writer's belief that after the first routine groundwork has been gone over, pupil nurses are best taught by topic with every available authority both nursing and medical put within their reach with a teacher or librarian to teach them how to get up their topics.

A SUGGESTION FOR CLINICAL DEMONSTRATIONS FOR JUNIOR NURSES ¹

The object of these demonstrations is to secure uniformity in routine work of the hospital. The demonstrations in no way take the place of the regular ward and class teaching, but serve as a review for junior nurses, the head nurses assisting in the demonstrations. At least two hours should be devoted to each topic, giving particular attention to the reasons for all methods. Patients, beds, and appliances should be provided and used, leaving as little to the imagination as possible.

The hospital amphitheater offers the best place, the raised seats giving a good view to all.

FIRST DEMONSTRATION.

Beds: Iron, brass, wood, folding beds.

Mattresses: Hair, felt, cotton, air, husk, excelsior, straw, water.

Pillows: Feather, hair, straw, and air.

Protection: Rubber draw sheets, cotton draw sheets, rubber pillowcases, and bedpads.

¹ Arranged by the author in 1896 and used with modifications continuously since in the Illinois Training School for Nurses.

Bed Covers: Counterpanes, sheets, blankets, pillow covers.

Cleaning: Bedsteads and mattresses, renovating.

Vermin: Prevention and extermination.

Making Beds: *a.* Straw, water, hair.

b. Making bed with patient in it.

c. Bed for operation.

SECOND DEMONSTRATION.

Hair: Washing, combing, and extermination of vermin.

Baths: Cleansing.

Changing: *a.* Position of patient.

b. Long and short nightgown.

c. Patient from one bed to another.

d. Mattress under patient.

Appliances: Pads, rings, cradles, hot bricks and bottles with covers, hot-water bags, head rest, foot rest, etc.

THIRD DEMONSTRATION.

Sponging.

Packing.

Sprinkling.

Tubbing: In bed and bedside.

FOURTH DEMONSTRATION.

Fomentations and turpentine stupes.

Poultices: Linseed meal, bran, corn meal, bread, onion, charcoal, and starch.

Plasters: Belladonna, mustard, adhesive, moleskin, and mustard leaves.

Blisters: Cantharides, croton oil, chloroform.

Painting with iodine.

FIFTH DEMONSTRATION.

Cupping.

Ice bags.

Ice caps.

Ice coils.
Cold compresses.
Eye compresses.
Alcohol sweat.

SIXTH DEMONSTRATION.

Gastric lavage.
Gastric gavage.
Nasal feeding.
Saline transfusion.
Enemata: Nutritive, sedative, stimulating, laxative,
saline, flushing, etc.

SEVENTH DEMONSTRATION.

Weights and measures.
Getting out medicines.
Methods of administration.
Making of antiseptic solutions.
Care of hypodermic syringe and needle.
Specimens of urine, sputum, etc.

EIGHTH DEMONSTRATION.

Sterilization: Hands, utensils, instruments, dressings, field
of operation.
Making iodoform gauze.

NINTH DEMONSTRATION.

Fractures: *a.* Illustrations with skeletons and charts.
b. Making fracture bed.
c. Illustration with patient and improvised
stretcher.
d. Positions and handling.
e. Various kinds of splints.
Bandaging: Spiral, reverse, figure eight, etc.

TENTH DEMONSTRATION.

- Care of gynecological patients:
- a.* Instruments.
 - b.* Positions.
 - c.* Local applications.
 - d.* Vaginal douches.
 - e.* Vesical douches.

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CHAPTER I

PERSONAL HYGIENE—THE PATIENT'S COMFORT

HYGIENE is the science which deals with the laws of health, a study of man's habits and surroundings to determine how far these are conducive or detrimental to his welfare.

The study of Hygiene is one of the most important subjects assigned to nurses. It is not designed to incorporate hygiene into a single chapter of this book, but simply to sound a few notes of warning to the inexperienced which may protect them until they have mastered the subject by theory and practice.

Value of a Sound Body. — One of the most valuable assets a probationer may possess is a sound body. With such a possession she will not only have physical endurance for the performance of hard work, but also a wholesome mental outlook which will lighten her labors and be a source of help and strength to the patient. To keep her health and vitality is a duty which need not necessarily become a burden nor entail systematic "coddling"; but by the observance of a few simple rules and a small amount of that rare quality called common sense, she may usually finish her training with unimpaired health.

It is not uncommon for young nurses when they are ill to assume that the illness is due to their hospital

work, forgetting the vast number of patients who have fallen sick without having been inside of a hospital.

That nurses are constantly exposed to the atmosphere of disease cannot be denied, but it is also true that in most hospitals there is comparatively little illness among them. Given good air in sleeping rooms, clean bodies and rational clothing, and simple food at regular intervals, little danger lurks in the hospital atmosphere. Nurses who fail in observing the hygienic rules of daily life for themselves cannot be trusted with such responsibility for their patients.

Nurses' Bedrooms. — Nurses' bedrooms should not be filled with pictures, cushions, draperies, and bric-a-brac to collect dust. A few simple decorations to relieve the bareness of the room are not amiss, but an abundance of things to be kept clean are burdensome and by the accumulation of dust become dangerous to health. The crowding of clothes closets with summer and winter apparel, uniforms and street clothing, is another unsanitary practice. Clothes for summer wear should be packed away in winter, and *vice versa*. Street clothing should be kept as far away from uniforms as possible, being a source of danger to the latter. Imagine the possibilities of the dust and its accompanying germs upon woolen skirts worn in the streets coming into direct contact with uniforms.

Beds should be thoroughly aired daily, not hastily spread up to present a smooth surface.

Sleeping in a room with closed windows is a most serious menace to health. The impurities thus breathed and rebreathed are as rank poison as many poisonous drugs. No sane person would knowingly take arsenic or opium or water impregnated with typhoid germs, but

the practice of inhaling poisoned air is of common occurrence, and directly or indirectly one of the most frequent causes of disease.

Daily Care of the Body. — Daily bathing is an absolute necessity, not only for cleanliness but as a safeguard for keeping the skin active. Not all persons stand cold baths, but where they are borne well, daily cold baths for nurses are most desirable, affording the stimulation needed from lack of outdoor exercise, protecting them from taking cold easily, besides accustoming them to a form of bathing which may usually be obtained in all places. Perfect cleanliness of the body produces an attractiveness of person obtained in no other way; while the dull, unpleasing appearance of the complexion, general mussiness, and odor of perspiration due to infrequent baths, is so altogether an unpleasant infliction upon the patient as to admit of no possible excuse.

The hair should be washed often, every fortnight at least, with special washings after exposure to contagion of any kind.

The teeth must be kept in good order, both as a matter of health and to avoid the possibility of unpleasant breath to the patient.

The care of the hands is of great importance. The nails should be cut rather short, hangnails kept closely cut, a stiff brush and nail file used vigorously. To prevent chapping and irritation some emollient should be used every night and also at intervals during the day while using strong antiseptic solutions.

Teeth, hands, and wrists should be thoroughly scrubbed before each meal and before going to bed, as a matter of self-protection. Several grave diseases are contracted through the avenues of the mouth and nose, therefore

making it of the greatest importance that the teeth, hands, and handkerchiefs should be kept scrupulously clean.

Avoid breathing or talking in the patient's face, always hold the hand in front of the mouth when coughing, and request the patient to do the same. The exhalations from tubercular and diphtheritic patients must be particularly avoided. Never put pins nor pencils into the mouth.

Chapping of the skin, pin pricks, scratches, or slight cuts afford avenues for infection which may prove serious. A sharp cut which bleeds freely is seldom infected, because the blood washes away any septic matter which may have been introduced by the instrument, while scratches and pricks which often seem too slight for consideration may prove fruitful soil for dangerous infections; consequently the greatest care should be exercised in keeping the hands clean and smooth and in protecting any breaks in the skin, such abrasions always being promptly reported to the head nurse.

The Uniform. — The uniform of a nurse is made of wash material, because it is more sanitary, affording protection to herself as well as to her patient. In the matter of underwear there is a wide diversity of practice, some of which is unsanitary and absurd. Much thought should be given to the comfort of the nurse's clothing. She cannot give undivided attention to work or study with collars, shoes, corsets, or sleeves which are uncomfortable. Such discomfort will not only distract her mind but irritate her nerves to the point of ill temper.

Collars should not be too high, nor tight, nor stiff. The nurse holding her head like a soldier on drill is a forbidding sight.

The hair should be simply dressed, high upon the head, affording freedom of neck movements, and covered with a cap.

Shoes should fit comfortably, and when provided with rubber heels, they give the wearer a firm, elastic tread, which is a pleasure to see and feel. Walking on the toes to prevent noise is annoying to the patient and gives the nurse not only a grotesque gait but excessive fatigue which is wholly unnecessary. Corns, bunions, ingrowing nails, and swollen tender feet are very common among nurses, caused largely by the combination of tight shoes, high heels, and constant standing. No treatment will correct any of these evils without the proper shoe first, and in most cases all may be cured speedily in that one way. There is, however, one painful ailment which needs immediate attention to prevent more serious trouble; that is, the breaking down of the arch in a person who is flat-footed. This is often corrected by wearing a tight adhesive plaster bandage, properly applied. These bandages may have to be worn more or less throughout the training.

The corset, like the shoe, produces a list of discomforts which are easily removed by wearing the right kind. It should be low cut in the bust to insure room for breathing and freedom for the arms, loose enough at the waist that the wearer may easily insert her own fist underneath. It is better still to wear no corset, but it seems hopeless to induce women to agree to doing without, while it must be admitted that those inclined to stoutness look neither so comfortable nor so tidy without one.

Sleeves which bind at the arm's eye and the elbow are excessively uncomfortable, restricting movement to the point of awkwardness.

The underwear must receive consideration. Light-weight woolen for winter, in the northern latitudes, is a necessity. Petticoats should be of wash material, not heavy dark woolen cloth which cannot be laundered every week; the latter by holding dust become a constant menace both to wearer and to patient. If extra warmth is needed, heavier woolen undergarments should be worn rather than skirts which collect dust.

Stiffly starched rustling uniforms, tight, creaking corsets, shoes, and collars, and overdressed hair, present an appearance to the patient both depressing and discouraging; while the nurse whose uniform shows perfect cleanliness and at the same time comfort and freedom for movement, at once attracts by her wholesome, easy manner which can never be present with uncomfortable clothing.

Waste from the Human Body. — Physiology teaches that there are four avenues for the discharge of waste from the human body, viz. the lungs, skin, kidneys, and bowels, and upon the perfect working of these organs largely depends human health. The lungs cannot perform their proper function if furnished with foul air; the skin works imperfectly if clogged; the kidneys need an abundance of pure water daily to flush and dilute their waste; the bowels should move freely daily, or there is retained in the body to be reabsorbed a foul waste so offensive to a person of cleanly habits that no further argument is needed to convince her of the necessity of guarding against constipation.

Wet Feet. — One of the most common offenses among nurses against their own health is going without rubbers in wet weather. Doubtless more so-called colds, neuralgia, and other pains are due to cold, damp feet, than from any other cause.

Irregular Eating. — Another bad habit is eating at irregular hours. We regret to admit that in most institutional life the food becomes very monotonous and is unsatisfying in consequence, which leads to the common practice of eating between meals and at bedtime. If change of food seems necessary, it should be taken at the regular meal time and not sandwiched midway between; furthermore, it should be of a wholesome, nourishing kind, not bakery stuff.

Drinking Water. — In most of the large cities and towns great care must be exercised regarding drinking water. Where a supply of distilled, sterilized, or some special water is provided, nurses should use it to the entire exclusion of hydrant water. A little forethought makes it an easy matter to refrain from drinking water from unknown sources when absent from the hospital or school. Nurses while actively on duty should drink very freely. Much of the water of the body is lost through perspiration and should be replaced by free drinking. Water is also needed for flushing the kidneys, and when freely used, prevents much constipation.

Unusual Symptoms. — All signs of the unusual in the condition of health should be at once reported to the head nurse or superintendent, whose duty it is to attend the nurses. Symptoms often appear trifling and of no consequence, but it is not for the young nurse to be the judge, as a little prevention may save much illness. An inflamed eye, sore throat, constipation, loss of appetite, disorders of menstruation, cuts or abrasions of the skin, are the most common symptoms which should always be regarded as danger signals and reported at once.

The whole training of a nurse gradually gives her

habits which become instinctive in protecting her patients and herself. To the credit of the modern trained nurse it may be said that she is almost wholly fearless for her own safety, which is no doubt the result of that instinct of safeguarding.

THE PATIENT'S COMFORT

Before taking up the first lesson in the actual care of the patient there is one point which we wish to emphasize; namely, the patient's comfort.

Whatever duties a nurse is called upon to perform should be done with due regard for the patient's comfort.

The young woman who has had good home training enabling her to work deftly and neatly, who has had physical culture, piano practice, fine needlework, and out-of-door exercise, is fortunate indeed; such work and play give her freedom of movement, prevent awkwardness, and also give a delicacy of touch which only comes from practice. The simple act of making the patient's bed may be done quickly, quietly, and easily with no discomfort to the patient, or be done awkwardly, with runnings to and fro, bumping against the bed, flapping of covers, and roughness in handling, and if, added to this, the nurse wears a tight, creaking corset which causes her to breathe wheezily into her patient's face, it is small wonder the nervous patient is in tears when the bed is done.

The majority of sick persons are sensitive to noises, odors, extremes of temperature, very bright, glaring light, and awkward handling. It is impossible in city hospitals to shield patients from all noise, but it is noticeable that they rarely complain of unavoidable

noises, and nurses can, by ordinary care and thoughtfulness, spare them from clicking heels, rustling skirts, squeaking or slamming doors, rattling of windows or dishes, loud voices, and all other unnecessary sounds.

A keen sense of smell is indispensable to a nurse and should be cultivated, not only for detecting bad ventilation, but for locating offensive odors that arise from any cause, for judging food and also drugs. Many a mistake in labeling medicine bottles has been discovered by nurses with keen sense of smell.

The use of perfumes by nurses is, or should be, forbidden; articles of food which taint the breath, such as onions, cabbage, and turnips, should not be eaten while on duty.

Extremes of temperature and glaring light are easily avoided when the nurse is alive to her duties. It becomes, for instance, very tiresome and irritating to a patient to be obliged to ask nightly for the light to be screened or daily for the shade to be drawn, and to be only warm enough when she asks for more heat or cool enough when she asks for more air. A nurse should know instantly when entering a room whether it be too warm or cold, too light or dark, and if the ventilation is good; it will not be necessary for her to formulate these things in her mind, but if she is properly trained and intent upon her duties she will, by force of habit, discover the thing which is wrong. Such habits of discernment come only by long practice; just as one in walking or driving in a crowded thoroughfare will instinctively avoid running over or against other persons and vehicles, so a good nurse habitually and instinctively avoids things which are causes of discomfort to her patients.

Good intentions will not offset rough, awkward handling.

The hands should be smooth, clean, and warm. Cold, clammy hands are often the result of tight sleeves and corsets. In taking hold of the patient the touch should be firm and sure, not jerky, pinching, nor uncertain.

Be careful about using the ends of the fingers instead of the flat of the hand in turning or lifting.

An excellent plan is for two young nurses to practice turning and lifting upon one another in their own rooms, when each can criticise the other and learn from demonstration what the discomforts of awkward handling really mean.

Let the one who is acting the part of the nurse undertake to lift the other by slipping her hands under the back and then trying to lift with the ends of her ten fingers.

Let her then try turning her by taking hold of the shoulder on the farther side of the bed and pulling at it with the finger ends again; if she at the same time rubs her elbow and sleeve in the patient's face, no doubt the nurse acting as patient can tell her very definitely how clumsy and awkward she is. The right touch of strength and sureness can come only by long practice. Giving one bath is as inadequate in learning nursing as trying once to ride a bicycle or to skate; it is only by doing the thing over and over again innumerable times that one does it easily for the patient and herself, and behind all the practice of the nurse quite as much as in the practice of the musician must be the spirit which animates it and makes real music of one and real nursing of the other.

CHAPTER II

WARD HYGIENE

PREPARATORY LESSON: Nature and Composition of the Atmosphere. Ventilation, Artificial and Natural. Scheme of Ventilation in the Hospital, where the nurse is receiving her training.

REFERENCE: *Principles of Hygiene*, by D. H. Bergey, M.D. *Nursing, its Principles and Practice*, by Isabel Hampton Robb.

FOLLOWING the lesson upon the principles of ventilation naturally comes the practice.

To bring theory and practice together upon a working basis is the goal for which we strive.

System of Ventilation. — The first consideration is how the ward or room is to be ventilated; if a system of ventilation is used, all nurses should understand it, how it works and how regulated.

If ventilation depends upon windows and doors, then intelligent observation is doubly needed to protect patients from draught and to regulate the temperature. If all wards were provided with the large thermometers which may be read from across the room, overheating would be less common.

In small wards or rooms, to prevent direct draughts, the window fly screens may be covered with cheese cloth, which will admit the air without the draught and also exclude a great amount of the smoke and dust of the city; such an arrangement will usually allow the lower half of the window to be raised to its full height,

the only objection to it being the appearance from the outside; but if the cheese cloth is neatly adjusted and kept clean, that objection is trifling.

The well-known practice of using a board fitted under the lower sash is good, but less satisfactory than the cheese-cloth screen.

In a small room, when it is necessary to thoroughly ventilate for a short time to remove bad odors, an umbrella may be opened, the handle resting upon the patient's shoulder with the edge of the umbrella behind the pillows, all being covered with a clean sheet, making a complete canopy, when windows and doors may be opened wide for five minutes and the air entirely changed.

Nearly all hospitals have many corridors which need better ventilation to secure good air for rooms and wards, while bath rooms and lavatories must have constant attention.

The presence of any accumulation of dust or filth or vermin would be felt to be little short of a disgrace by most nurses, and the presence of foul air should be regarded in the same way.

Sources of the Contamination of the Atmosphere. — The second point for consideration is the sources of the contamination of the hospital atmosphere.

First, the congregation of any number of persons, sick or well, exhausts the atmosphere. Add to this the poisonous emanations from various forms of disease, the retention of soiled clothing or utensils in the room or ward, the accumulation of dust, flowers, papers, remnants of food, etc., and it may be readily seen that the supply of pure air must be *constant* and that eternal vigilance is needed to remove these causes.

As before mentioned, a keen sense of smell is a valu-

able possession for a nurse and if she is lacking in it, a careful cultivation will soon develop it, thereby enabling her not only to detect bad odors but also that peculiar lifeless quality of the air commonly known as "stiffness."

Rooms which have been thoroughly cleaned and aired and then shut up closely will become stuffy in a few hours, a condition which speedily produces both mental and physical depression.

A nurse should, in her earliest training, school herself to notice the state of the ventilation at the moment she enters the room or ward. It is a peculiarity that in a very few minutes we become accustomed to a certain amount of impure air and lose our keen sense of it; consequently the moment of entrance is the best time for noticing it especially.

Again, the most common error among nurses is the idea that cold air is necessarily pure air, which is in many instances a grievous mistake. Granted that cold air is pure, if coming directly from the outside, we may have the same "stiffness" with cold rooms insufficiently heated, which is even more depressing than when too warm.

The temperature of the ward should not be allowed to rise over 70° F. with an abundance of fresh air. Individual patients often need greater body warmth, which may be secured by extra blankets, gowns, or hot bricks, hot-water cans or bags.

Much attention has been given recently to out-of-door treatment for many patients, and in some wards windows and doors are kept wide open in very cold weather.

It is in such cases and conditions, however, that

nurses must give especial attention to securing sufficient warmth for the patient's comfort.

The sight of feeble convalescents clad in pajamas or an ordinary wrapper, without extra wraps, sitting in a ward with a temperature of 50° or less, their poor faces and hands blue with cold, while strong, healthy, warmly clad doctors and nurses, whose physical activity renders them comfortable, dwell at great length upon the modern fresh-air treatment, is calculated to raise a question of its efficacy in all cases. The night nurse will find that a temperature of 50°, with an abundance of fresh air, will insure more sleep and rest for her patients, provided they have sufficient bedding.

Nurses should bear in mind that their judgment should be from the standpoint of the patient and his welfare and not from their own healthy, active condition.

Upon the nurse's arrival on duty she should look after the ventilation, noting meanwhile whatever causes may exist in the room or ward to render the air unwholesome.

Soiled clothing should be removed with all possible speed, especial attention being given to removing it from the bed without shaking or throwing it about. When soiled with discharges of any kind, it should be taken away at once; if perfectly dry, it may be rolled tightly and put into clothes bags provided for the purpose, which the nurse carries with her during her morning round of work.

At any other time the soiled clothing should be taken away at once, likewise remains of food, flowers, or any other refuse which might add to the impurity of the atmosphere.

Hospital Odors. — One of the difficulties of hospital

ventilation lies in the odors arising from the use of carbolic acid and many other disinfectants, making it next to impossible to keep the air free from the heaviness of their disagreeable qualities.

Bath rooms and lavatories need constant and systematic care. Perfect cleanliness is the best deodorant; a bedpan or urinal will not be made clean and wholesome by simply dipping or rinsing in a disinfectant.

Cleansing Bath-room Utensils. — An excellent routine is for all bedpans and urinals to be put to soak in a 5 per cent solution of soda in a portable tin or galvanized iron tub kept for the purpose, never using stationary tubs. If this is done by the night nurse at four or five o'clock in the morning, the cleansing will be finished before the rush of the morning work begins, and it is an hour when the utensils are less apt to be in use.

Leave the things in the soda solution for at least half an hour; remove one at a time, scrubbing with hot soapsuds, using the long-handled sanitary brush and a swab, but do not put the hands into this soapsuds; put the utensils under the hot-water faucet, and scald thoroughly.

After this morning cleansing the cotton cloth or wicking on the swab should be removed and clean cloth substituted, otherwise the swab becomes offensive and dangerous. It should never be forgotten that bacteria *may be present in all excreta*.

To clean the bedpans or urinals as they are used in all ordinary cases they should be first thoroughly rinsed in cold water, followed by boiling or very hot water. It is a great mistake to use the boiling water first, as it coagulates some of the elements of the discharges, making

it difficult to clean the vessels, thus leaving a disagreeable odor which it is nearly impossible to remove.

In all cases of typhoid or any infectious diseases, the utensils used should be marked that they may not be used for other patients.

The bedpans and urinals for typhoid or other infectious cases should be partly filled with a 5 per cent carbolic acid solution before using and left to stand ten minutes after using, rather than adding the carbolic acid after using. The first procedure is better for two reasons: first, the better disinfection; and second, if the fluid is put in the vessel first, the subsequent cleansing is much more easily done.

Every ward should be bountifully supplied with covers for carrying bedpans and urinals. The most sanitary cover is made of heavy cotton cloth, such as mattress ticking, because it can be washed and boiled; but for controlling strong odors, white double-faced rubber cloth is better. Single-faced rubber cloth should never be used.

The free use of soda solution in all basins, sinks, and slop hoppers in bath rooms and lavatories minimizes the odors greatly; but it must be a daily and systematic procedure, there can be no halfway measures.

The odor of carbolic acid and many other disinfecting agents is extremely offensive to many patients, besides disguising odors arising from unclean conditions, and therefore soda, bichloride of mercury, and chloride of lime are much more used than formerly.

Receptacles for soiled clothing should not be kept in bath rooms; fire-escapes and covered outdoor galleries and porches should be utilized as far as possible for that purpose, as well as for garbage cans, both from wards and kitchens.

Garbage. — A regular specified time, not less than twice daily, should be appointed for the removal of garbage from every ward.

Soiled Linen. — In hospitals where nurses are required to wash 'out garments which are much soiled, it may often be done quickly and easily by holding the soiled portion of the garment down in the basin of the water closet and flushing it. The garments may then be thrown into a tub of cold water or disinfecting solution. This procedure avoids immersing the hands in the first unclean water, and protects the nurse; for the infant's diapers or for accidental soiling of the draw sheet, in fact in most cases, this may be easily accomplished; but to throw one soiled garment after another into a portable tub, without a drain, to stand for one hour or six until the nurse has time to rinse them out, is offensive, unsightly, and unsanitary.

Properly, every hospital should be provided with a suitable place for such work, adjacent to the laundry, thus doing away with it in the ward entirely.

A simple and inexpensive arrangement is a small room with a concrete floor provided with a large drain in the middle. A number of portable tubs (not wooden) filled with cold water are kept in the room, into which soiled or infected linen is thrown at once. Twice or thrice daily the garments are lifted out one at a time, with a clothes stick, and are hung over a small clothes bar standing over the drain; the cold hydrant water is turned on them through a garden hose. They may then be carried to the laundry adjoining and the room be flooded with the hose.

In the Rochester City hospital, where this plan is carried out, it is said that no laundry employe has ever contracted an infectious or contagious disease. .

CHAPTER III

BEDS AND BED MAKING

THE modern hospital bed is made of metal, either iron or brass, as affording the most sanitary, durable, and convenient bed for hospital use.

Kinds of Beds. — The present generation of nurses will probably only encounter the wooden bed in private houses; many houses, however, use some modified form of the metal hospital bed.

Iron or brass presents a smooth, impervious surface, giving no chance for the lodgment of dust and disease germs, which causes wood to be so undesirable; again, brass may be cleaned and polished, and iron may be scrubbed and painted much more easily than wood.

The open spaces in the finish of the head and foot of metal beds are also more desirable than the solid head and foot of wooden beds, which interfere more or less with the circulation of air.

White-painted iron beds with some brass finishings are almost universally used at present. The white paint allows dust or dirt of any kind to be instantly seen, and compels the frequent washing of the beds if for no other reason than appearance.

Another advantage of the metal bed is that the springs of the hospital bed may be adjusted at different heights, thus relieving a nurse from the unnecessary fatigue which comes from a stooping posture, when the bed is

low, and also the great extra exertion needed to lift the patient when the bed is too high.

The design for hospital beds is preferably in simple, straight lines with smooth surface. The ornate scrolls and curves sometimes seen in both iron and brass beds are peculiarly unfit for hospital use, affording too many places for the lodgment of dust, and requiring too much time for dusting and washing, besides lacking the simplicity which is the attraction of uniformity.

Mechanical Devices. — There are many devices for the lifting and turning of patients, some a part of the bed and others for attachment, but it seems to be the consensus of opinion that complicated mechanical beds are not usually satisfactory; most hospitals are furnished with a few for especially helpless patients, while the majority of the beds are plain, strong, single or three-quarters size, iron, painted white, with brass knobs and rails.

In private houses or boarding houses nurses often find folding beds of various kinds. Those made of metal are not so objectionable, but a folding wooden bed is an abomination happily now becoming rare, although very common twenty years ago.

Mattresses may be of hair, cotton, wool, felt, corn-husk, straw, or feathers, their desirability being in the order in which they are mentioned, hair standing first and feathers last, although some of the best hospitals use a cotton mattress which is especially prepared and in one way is superior to hair, as it does not pack and sink in the middle as quickly as hair and is therefore preferred by many patients. The cotton mattress has one drawback for the nurse in its weight, which makes it harder to turn and handle. The husk mattress affords a poor bed for the sick, being hard and noisy.

always making a crackling sound upon the least movement, besides packing down into a hollow in the middle in a very short time.

The old-fashioned straw mattresses have two excellent qualities, cheapness and easy renovation, which make them valuable in some instances, such as contagion or constant involuntary discharges.

Feathers are so rare in these days that they scarcely need mention. The only time they are likely to be considered at all by a nurse being for old people who have always used them.

In addition there are two mattresses designed for the use of very helpless patients who are confined to their beds indefinitely, namely, the air and water mattresses; both are made of rubber, the first inflated with air, and the second filled with water.

The air mattress has not usually the "boxed" edges, but is simply a rubber cushion to be used over the ordinary hair mattress. The water bed has the "boxed" edges like any mattress and is furnished with a brass stopcock like a hot-water bottle, through which the mattress is filled and emptied.

Pillows. — Each bed should be supplied with two pillows, one of feathers and the other of hair, but every hospital linen room should have an abundance of extra pillows and pads of various shapes and sizes for the comfort of helpless patients. Air pillows are often used, but all rubber goods are very expensive and can only be provided sparingly in most hospitals.

Sheets and Pillow Slips. — Cotton sheets and pillow slips are much better than linen, as linen is cold to the touch, rumples with the slightest use, and is more than doubly expensive.

Sheets should always be made one yard longer and wider than the mattress, to give plenty of extra width and length for tucking under. It is almost impossible to make a smooth, comfortable bed unless there is enough of the under sheet tucked under to hold in place by the weight of the patient's body. To pin sheets in place takes too much time and constantly tears the sheets. A sight too often seen is a sheet too short for the mattress, carefully covering the upper end of the mattress for appearance' sake, while at the foot of the bed will be found a portion of the mattress entirely uncovered, and the patient's feet resting upon it. Such a practice is not decently clean. If the sheets are too short, put an extra one at the top, which need not be changed so often as the one covering the middle and foot of the mattress, and then put on the short sheet covering the foot and middle. The upper hem will usually come under the draw sheet, thus avoiding wrinkles.

The draw sheet is a sheet folded crosswise in half, usually put across the middle of the bed, the folded edge coming underneath the lower edge of the pillows.

The upper sheet, after tucking under the foot of the mattress, should fold over twelve or fourteen inches at the top, to protect the upper edges of the covering. Sheets which are amply large and properly adjusted protect both mattress and covers and save a very large amount of laundry and renovation.

Pillow slips should be large enough to allow the pillow to slip in easily, but not too large to allow the pillow to turn sideways; a pillow slip too tight is not comfortable for the patient, a slip too large makes an untidy-looking bed.

Counterpanes of dimity are the best; the *Marseilles*

quilt so often seen is heavy, uncomfortable, and difficult to launder.

Blankets. — Woollen blankets are the only proper bed covers for the sick, being light in weight, warm, and porous.

In the case of patients who perspire freely, and especially where the skin is cold and clammy, it will be found that with heavy cotton "comforters" and counterpanes it is almost impossible to restore the skin to warmth and dryness and the covers are damp, while the same patients covered with dimity counterpanes and woollen blankets will speedily become dry and warm, while the bed has no dampness. In extreme cases of shock it is well to remove both the upper sheet and counterpane, leaving only the warmed woollen blankets over the patient.

Protection of the Bed. — The protection of the bed is a matter of serious concern to all head nurses, and a little forethought and good judgment on the part of the ward nurses would often save an immense amount of time, trouble, and expense.

The sum and substance of the matter is to *protect the bed when and where it is needed*. Quilted mattress pads, long black rubber sheets (blankets as they are called by the trade), white rubber cloth, both single and double faced, are all used to protect the mattress and pillows.

Every ward should be provided with a number of pillow slips made of rubber cloth or some other waterproof material made with tapes, or buttons and loops, to fasten securely; these are put on the pillow first, the cotton slip going over them, — to be used in fever cases where an ice cap or cold compresses are ordered,

in surgical cases where there is a discharging wound on the head or neck, in fact in *any case where the pillow is liable to become soiled or wet.*

In the majority of cases the mattress should be protected by a rubber draw sheet put on the middle of the bed over the lower sheet, and underneath the cotton draw sheet, affording ample protection in case of accident with bedpan or urinal.

But this is not always enough; for instance, a foot or leg amputation or other operation may be accompanied by a considerable discharge of bloody serum, which calls for protection of the lower end of the mattress. In typhoid fever the mattress should be *entirely covered* with rubber cloth under the lower sheet and the rubber draw sheet should also be used across the middle of the bed in the usual way; thus the mattress need not become soiled even in case of severe hemorrhages.

Before using any rubber draw sheet or pillow slip, always hold it up to the light to look for breaks or pin pricks and never put one which is not impervious upon a bed.

It is not too much to say that a large amount of money is wasted every year in most hospitals from lack of proper protection of the bed.

Cleaning the Bed. — Mattresses and pillows, which are protected from discharges of any kind, need not be renovated more often than once a year, except in cases of contagion; but no hard and fast rule can be made, as it will be entirely according to how much and what kind of use they have had; and to continue the use of either after they have been soiled and spotted is a dangerous and offensive practice.

In cases of contagion the mattress and pillows should be wrapped in sheets damp from a 5 per cent carbolic acid solution and sent to a steam sterilizer, after which they may be ripped and renovated in the usual manner, except in cases of smallpox, when they are to be burned at once.

Daily Cleaning of the Bed. — The painted iron bed should be dusted daily with a damp cloth, and should be washed with warm soapy water, using sapolio when necessary, once a week at least, oftener when it is necessary to remove marks of any kind. The wire springs, particularly at the points of insertion into the iron bars at the head and foot, should be brushed out daily, giving especial attention to the accumulation of dust out of sight, underneath the mattress.

Too much stress cannot be laid upon the danger of dust¹ to both patient and nurse.

Vermin. — A close watch must always be kept for vermin in the beds. This can be given at the time of the daily dusting and brushing, as the vermin, when present, are nearly always lodged in the crevices at the fastenings of the springs and side rails. The box for a water bed needs constant watching for vermin. Should any be found, use a small amount of 95 per cent carbolic acid in an old cup; apply with a medicine dropper to the crevices. This should be done daily for a week or until no more are found.

Use the carbolic acid sparingly; too much is wasted by running down the legs of the bed, where it destroys or discolors the paint, and if dropped to the floor, leaves a dark stain and removes the floor polish. A newspaper on the floor is a good protection; never use soiled sheets

¹ See Prudden's *Dust and Its Dangers*.

or counterpanes for such a purpose, as all bedding should be rolled as it is removed and not shaken out in the ward.

Water Beds. — When a water bed is ordered, the hair mattress must be removed and the bed thoroughly washed and carbolized, as the water bed completely covers the springs and makes cleaning very difficult.

A wooden box, the same size as the water mattress, is used to hold it; this also should be scrubbed and carbolized, and then watched very carefully for vermin, the crevices affording an excellent lodging for bedbugs.

Spread a clean old double blanket in the bottom of the box before putting in the water bed; this will prevent the rubber from sticking to the boards under it.

If the patient is to be put upon the water bed at once, fill it with water at 100° F. If the room or ward is very warm,^{*} and the bed may stand over night, cold water may be used; but to put a patient, such as a paralytic, who is helpless and who has a feeble circulation, upon a water bed filled with water at 40° or lower, is both cruel and dangerous. The bed will not become comfortably warm for days. The water bed should first be covered with one or two thick mattress pads, then with a new thick double woolen blanket, and then with the sheets and draw sheets the same as a hair mattress, except that *no pins should ever be used.*

No patient should be left on the same water bed indefinitely; at least once in eight or ten weeks he should be lifted to another bed, the water emptied, the rubber washed and carbolized, and likewise the box and bed.

It is better, if possible, to use another box, one that has been freshly painted or cleaned.

The Surgical Bed. — In the case of a majority of surgical patients the ordinary bed may be used, made as

before described, except immediately after the operation, when the bed is especially prepared to receive the patient and guard against shock.

Heating the Bed. — The modern operating room is usually provided with a closet or cupboard for heating blankets, kept hot by steam pipes or electricity; thus the patient is sent back to his bed enveloped in warm, dry covers which are not removed at once and the exposure is avoided which is necessary when the bed is heated by hot-water bags or hot bricks, likewise that ever present danger of burning the patient which often occurred by the old method.

However, many hospitals are still without these hot cupboards, and in such instances the bed for operation patients must be made thoroughly warm by putting into it six or eight hot bricks or bottles for at least a half an hour.

The head of the mattress should be protected temporarily with a strip of rubber cloth and a folded sheet, which should be removed as soon as all danger of vomiting has passed. A basin should be upon the table, and two or three clean towels and several squares of clean old linen should be hung upon the head of the bed to use in case of vomiting; these to be taken away as soon as used. Nothing is more unpleasant nor conducive to continued nausea than the odor of vomitus and soiled linen in the room.

The bedding should be loosened from the foot of the mattress that it may be easily rolled back out of the way when the patient returns.

When the operation is of a serious nature and shock may naturally be expected, the upper cotton sheet and counterpane should be removed and only woolen blanket covers left on the bed.

If the bed is very warm and the patient's skin warm and dry, the hot bricks or bottles may be removed altogether when he returns; but should the patient be in shock, ever so slightly, the hot bricks or bottles should be left in the bed *upon the top of the first blanket* and covered by the upper blankets. *Never have either bricks or bottles next to the patient nor between the arms and the body, nor between the feet.*

Such hot bricks or bottles must be constantly watched; a restless patient will throw himself against them, a patient in shock may be conscious and yet unconscious of the pain of burning, and again a patient in shock burns much more readily because the circulation is feeble.

The burning of a patient under any circumstance is inexcusable, constituting a dire offense on the nurse's part.

Immovable Bed. — In cases of fracture, or for any other cause requiring a flat, immovable bed, a number of boards, whose length equals the width of the bed, may be slipped under the wire springs, their ends resting on the two side rails.

Pads and Cushions. — Every ward linen room should be abundantly supplied with pads, cushions, or small pillows of various shapes and sizes, to be used to insure comfort for the patient and to prevent pressure which might cause bed sores.

Helpless Patients. — Especial attention must be given to such patients as are unable to move themselves, such as paralytics, rheumatics, and the more complicated surgical cases, who are hampered by splints, extensions, or other surgical apparatus.

The young nurse is apt to fail in realizing the discom-

fort of this class of patients and to be impatient of their frequent requests for change of position.

To all such the writer suggests that they each make this experiment of lying flat upon the back with one leg straight in the bed, resting on the heel. Let her lie in this position fifteen minutes without turning or bending the one leg and if she is not convinced of the unbearable fatigue of such a position, she is possessed of uncommon fortitude.

To most patients lying on the side, to have the pillows placed obliquely in the bed, that is, lower down in the bed in front than behind them or *vice versa*, is more comfortable; in some way it relieves a strain in the muscles of the neck and shoulder.

One or two pillows tucked under the shoulder from the back give support which is very grateful; and again, a pillow put lengthwise under the side on which the patient lies will throw more weight forward upon the knees and shoulder, thus relieving the tired back muscles.

A helpless patient, who lies long on his sides, should be provided with a flat pad placed between the knees or the knees should be wrapped in cotton bandaged enough to hold it in place.

Should it be necessary for the patient to lie upon the back, particular attention must be given to the heels, which nature has provided with ample cushions for walking and very poor ones for lying upon.

There is probably no other part of the body which gives the same stinging, burning pain and discomfort as the heel when under pressure.

Heel Pads and Cushions. — A round heel pad, the shape of a doughnut, made of a roll of cotton covered with a bandage, is excellent provided it is of the right size

and not wound too tightly. It should be just large enough to allow the heel to escape the bed; if too small and hard, the pain is in a ring instead of at one point.

The most grateful heel cushion, however, is a small rubber bag filled with cold water and covered with a bit of soft old linen.

If the rubber bag is not to be obtained, a pig's bladder may be used quite as well, filling it with water and then doubling over the opening and tying tightly with a shoestring, taking care that the part tied does not come under the point of pressure.

Pig's bladders may also be used for chipped-ice applications for any small area. Once they are well cleaned and dried they are quite inoffensive and inexpensive, although easily broken.

Where patients must lie long upon the back, the elbows become nearly as painful as the heels, although change of position is more easily accomplished.

Covering the elbow with a small pad of cotton, and sufficient bandage to hold it in place, may be tried or small feather pillows or cushions may be placed in the bed for the arms to rest upon.

Cradles, Head Rests, Foot Rests. — Cradles, which are a framework for relieving the weight of bed covers, may be made by crossing two half barrel hoops at right angles and winding them with a roller bandage, but a hospital should be provided with a number of permanent cradles made of iron hoops of various sizes.

For a foot, a cradle should be rather small, that it need not interfere with the position nor movement of the other foot, but a cradle to relieve pressure upon the abdomen should be large enough to escape the sides of the patient.

Head and foot rests are of various kinds, nearly all hospitals having their own design; those that are adjustable are best, and whatever the pattern they need to be supplemented by pillows and cushions.

A patient sitting up in bed usually needs both head and foot rests, or the inclination is to slip down in the bed; also the rubber ring air cushion, to relieve the pressure at the end of the spine.

There are also a great number of rubber, air, and water cushions, pillows, and rings, which secure the greatest comfort to patients; but unfortunately all rubber goods are expensive, increasingly so, and if subjected to hard usage or neglect, are soon useless. Consequently pillows and cotton pads must often be employed as a matter of economy.

MAKING THE EMPTY BED

Large bags, 36 × 54 inches, made of ticking, with two strong loops at the upper corners, should be provided for each nurse to use for soiled clothes while making beds.

Nothing is more unsightly or unsanitary than piles of soiled linen lying on chairs or floor. With the bags, which can be hung by one or both loops to the knob of an empty bed, or the back of a chair, or even laid on the floor, soiled linen may be tightly rolled and put out of sight immediately, the bag being removed at once if offensive.

The bed is first washed or brushed and dusted with a damp cloth, carbolized if vermin are found or suspected, the mattress well brushed, giving especial attention to the corners, boxed edges, and tufts where it is tied.

Articles Needed. — To make the bed three sheets, two pillow slips, a rubber cloth draw sheet, a quilted mattress pad, a double blanket, four safety pins, and a counterpane will be needed.

Arrange the pillows and bedding in a chair in the order in which they will be used.

Wasted Steps and Time. — To make one or a number of empty beds and go entirely around the bed for each article means walking around each bed at least six times, which causes a great many steps, most of which are wasted time and strength.

Saving Time and Strength. — After the bed is dusted and cleaned, ready for the bedding, it may be entirely made by going around it just once.

At first thought this seems impossible, but by doing it slowly and carefully, with undivided attention for a few times, it soon becomes a habit and is easily accomplished in half the time it takes to run from one side to the other with each article. First put on the mattress pad, then unfold the lower sheet, putting the middle of the wide hem in the middle of the upper end of the mattress, spread the sheet across the top (never flap it up and down even when making an empty bed), allowing enough to come well over the upper end of the mattress, tucking it under the top as far as can be reached across, leaving the edge of the far side loose. Next make a square corner, tuck in the edge of the sheet next to you, beginning at the upper corner and smoothing out the top as you go on, tucking in the side, down to the foot. Arrange this corner like the first, pulling the sheet smooth and tucking under the foot as far as can be reached across.

Next put on the rubber draw sheet, its upper edge

coming under the lower edge of the pillows, cover this with the folded cotton draw sheet, the folded edge at the top, tuck the cotton draw sheet under the mattress as far as the lower sheet goes, and pin the two corners next you to the underside of the mattress with two safety pins, smoothing out the draw sheets across the top of the bed as far as can be reached.

Next put on the upper sheet, beginning at the bottom corner with the narrow hem, tucking it under at least six inches and smoothing up toward the head of the bed. Put on the double blanket with the fold at the foot of the bed, and then the counterpane; fold under enough of the blanket and counterpane at the foot so that their upper edges will come evenly and comfortably over the patient's shoulders, and not bringing them up to the head of the mattress to make a cumbersome bunchy mass around the neck.

Now go to the other side of the bed and, beginning at the foot, fold back the upper covers, tuck in the lower sheets, as was done on the other side, then the draw sheets, pinning the cotton one to the underside of the mattress, making it as smooth and tight as possible, returning the upper covers one at a time, making a square corner at the foot, and finally turning the extra length of the upper sheet outside of the blankets and counterpane. Returning to the first side, turn the upper sheet over the covers, put the hair pillow flat upon the bed with the open end away from the door, and stand the feather pillow upright with its open end in the same direction.

Putting on the pillows is the finishing touch and should be neatly done. If the pillow slips are extra wide, shake the pillows well down in one side, putting the extra width of the hair pillow slip at the back edge,

and turn the extra width of the feather pillow slip under at the lower edge.

Now give the bed a few smoothing pats and touches and its toilet is done in less time than it takes to describe it.

Uniformity. — When there are a number of beds in the same room, try to have them look uniform, not with the counterpanes longer on one side than the other, one upper sheet folded over twelve inches and another eighteen, pillows tilted at different angles, and the beds standing in uneven rows.

Jarring the Bed Needlessly. — Having learned to make the empty bed with a minimum of steps, the next point for practice is to do it without jerks, jarring, or bumping. In rolling even an empty bed, do not jerk it suddenly; in arranging the corners and tucking the bedding under the mattress, be careful about jerking the ends and corners of the mattress and dropping them with a thump; do not bump against the bed while going around it; school yourself against taking hold of the bed or leaning upon it, and never sit upon it.

Be careful about dropping any utensil, or clattering one against the other.

To a nervous patient these irritating little sounds and movements are torture, and will often create a dislike for an otherwise good and faithful nurse.

Changing the Bed with a Patient in it. — Before touching the bed, be sure that all the needed linen is within reach to avoid leaving the patient until the bed is done.

Remove the safety pins from the draw sheet, take off the counterpane and slip off the upper sheet if that is to be used for the draw sheet. This must be done

without removing the blanket or exposing the patient. Now loosen all that is tucked under the mattress and take away one pillow.

Changing Pillows. — In taking out or putting in pillows clumsy movements are trying to a nervous patient. In this instance the hair pillow is usually removed first.

Stand at the patient's right side, slip your left hand and arm under the feather pillow until your hand is well down under her left shoulder, the feather pillow and her head are resting in the hollow of your arm; now lean over, raise her head and shoulders, and with your right hand pull out the hair pillow *away from the patient*, dropping it into a chair or table put there before to receive it.

If the feather pillow is to be removed also, use the left hand and arm directly under the patient in the same way and take away the pillow in the same way, but never pull or shove a pillow without first supporting the patient's head.

Nurse's Position in Lifting. — If the hand and arm are well under the patient and the knees are well braced against the bed, the effort of lifting is not great, but to attempt it with all the patient's weight upon the wrist and forearm is an unnecessary strain.

In lifting a patient's body the nurse should brace her knees against the bed, draw in her abdominal muscles, and bend from the hips, which will save the strain upon her back.

Putting a number of pillows under the head and shoulders requires some management to do it comfortably for the patient. Again stand on the patient's right side, having the clean pillows on a table at her left. Again lift her head and shoulders with the left hand and arm,

a little higher than before, and leaning across, adjust the pillows one after the other, to suit the position the patient wishes.

Frequently one sees nurses working with the pillows on the same side of the bed with themselves, thus requiring various turnings and contortions to reach them and causing much discomfort to the patient.

Changing Bed Linen. — Before beginning the change of bed linen, help the patient to turn over as far as she can in the bed to her left side.

✓ Here again the nurse can give great help, and except in extreme cases of weakness and helplessness, can turn the patient alone.

Turning the Patient. — Go to the patient's left side, lean over and slip the right hand well down under her right shoulder, the left hand well under her right hip, slowly roll her toward you, always letting her feel that your grasp is sure and strong and never hurting her by pressing into her flesh with the ends of your fingers.

To seize the patient's shoulder with both hands, causing her body to twist and drag across the abdomen, is not only painful but in such instances as typhoid fever or abdominal surgery is dangerous.

Always give support to the parts of the body which need it.

In the cases of typhoid fever and abdominal surgery, for instance, if the nurse must turn the patient alone, let her use both hands under the hips and side; no harm will be done if the shoulders and legs do drag a little. If the patient has an afflicted foot or leg, she needs the support at that point, or if she has had a breast, neck, or head operation, the support is needed there.

After the patient is turned over far to one side, roll up the cotton draw sheet, under sheet, and mattress pad close.

to the patient's back, brush the mattress, wipe off the rubber draw sheet, and put on the fresh mattress pad if one is needed, or unroll the one already on the bed, add the under sheet as was done with the empty bed, folding the extra fullness against the patient, smooth out the rubber draw sheet, add the cotton draw sheet, pinning with safety pins as before.

Changing Nightgown. — If the nightgown is to be changed, remove it from the right arm and put the arm into the right sleeve of the clean gown, folding the left side of the gown also against the patient. All of this extra fullness of sheets and gown must be folded as smooth and flat as possible to allow the patient to turn on her right side.

Turn the patient toward you in the same way as before and finish changing the nightgown before going to the other side of the bed.

Now remove the lower and cotton draw sheets, pulling the clean sheets tight and smooth, being sure that the rubber draw sheet is without wrinkles.

Put the clean upper sheet over the blankets which cover the patient, arranging the wide hem and plenty of extra length at the top first (never stand at the foot or side of a bed and flap any covers up and down in the patient's face); then, holding the top of the clean upper sheet in one hand, slip the other hand underneath it and push the blankets down to the foot of the bed. Take out the blankets, see that the ends are even, adjust them at the top, add the counterpane, turn over the extra length of the upper sheet, and then go to the foot and arrange the upper sheet, blankets, and counterpane, being careful to give room enough for the patient's feet.

Draw Sheets. — When the draw sheets are much soiled,

a fresh rubber should be put on, as it is almost impossible to clean a badly soiled one while on the bed.

A soiled rubber should be scrubbed with soap and water on both sides, rinsed in clear water, then carbolyzed and hung out of doors in the sun and wind.

In cases of typhoid fever the rubber draw sheet should be changed whenever the bed has clean linen.

Long Gowns. — The long nightgown cannot be used when the patient is unable to turn and help herself in any way. When the long nightgown is used, it is changed more easily while the patient is lying on her back. Let the patient lift her hips slightly by resting her weight on her feet, the nurse pushing the back of the long gown up under her shoulders, and the arms may then be slipped out of the sleeves by pulling up the front over the head.

Take the clean gown by the back of the collar, having the whole length of the back of the gown in the hand, thus avoiding rumpling the front, put it over the patient's head, letting her put in her arms at the same time, lift her head and shoulders, and then her hips slightly, when the gown may be easily pulled down into place.

With a weak and helpless patient do not shove the arm into the empty sleeve; the sleeve will double and the hand stick midway. Put one of your own hands into the sleeve at the wrist, pushing it in to the arm's eye, and then taking the patient's hand, gently pull her arm into the sleeve.

CHAPTER IV

BATHS

Tub Bath for Cleanliness. — The bath for cleanliness is, of course, preferably a tub bath and may often be given to bed patients who are able to go to the bath room in a wheeled chair. This point, however, is never decided by the nurse; tub baths for bed patients are only given by the doctor's orders.

In such cases the bath room should be entirely in readiness before the patient is gotten out of bed. There should be no uncertainty about the bath room being warm, clean, with an abundance of clean towels and hot water. The water should be drawn, and of the proper temperature, at least 100° F., adding more hot water if needed.

If the patient is able and prefers it, she may take her own bath; but the nurse should never go beyond the sound of the patient's voice while she is in the tub.

The hot and cold water faucets should be pointed out and an especial warning given of the hot faucet if the water is boiling; some bad accidents of scalding have occurred when patients were bewildered by the escaping steam.

Where the nurse must give the entire bath she should give every assistance in helping the patient into and out of the tub, especially in getting out, when hands and feet are slippery from the soapy water; a fall against the rim of the tub and the breaking of a rib or two are not

infrequent with the well and are much more liable to occur with a weak and nervous patient.

Vigorous rubbing while in the tub, and with warm bath towels for drying the skin, is a necessity both for cleanliness and for the refreshing glow which follows.

In drying, do not leave moist areas behind the ears, at the edge of the hair, between fingers and toes, nor in any other spot; in other words dry thoroughly and quickly.

In cold weather towels and gowns should be warmed on the radiator and the patient wrapped in a warm blanket while in the wheeled chair, no time being lost in getting her speedily back to bed, with a hot brick or water bottle to her feet if they are cold.

It should always be borne in mind that nervousness may produce chilliness and shivering, even in very hot weather, and under such circumstances the patient is cold and needs the same extra heat of room, bath, and clothing which she needs in cold weather; here again judgment must be guided by the patient's comfort and condition, not by the nurse's personal feeling.

The Bed Bath. — The bed bath must be given with the same regard for temperature and avoidance of delay. The room must be comfortably warm, with especial precautions against draughts when the bed is in a ward.

Screens. — Screens should surround the ward bed completely during a bath, that the same privacy as that of a private room may be secured.

No nurse should ever open the screens surrounding a bed without first knocking, exactly as she would at the door of a room. It is not an uncommon sight to see one nurse, wishing to speak to another, open the screens

and walk in upon a bed bath, enema, or douche, without apology. Too much stress cannot be laid upon the right of every patient to personal privacy, which nurses are bound to respect.

There are many offices which nurses are required to perform which are extremely trying to every patient; to lack in modesty and respect is not only a serious offense against the patient but stamps the nurse herself as lacking in refinement and self-respect, and no nurse can afford for one moment to lose sight of her own attitude in this particular.

It is a well-known fact that both men and women patients of the degraded classes will be extremely careful not to offend a nurse whose demeanor is modest and dignified.

All needed articles for giving the bed bath, together with the necessary clean bed and body linen, should be collected before touching the patient or bed. Towels, wash cloths, soap, mouth-wash, scissors, comb and brush, an abundance of hot and cold water, whisk broom, slop pail, and bath basin are required, besides many other articles usually kept in the nurse's toilet basket, such as powder, emollients for lips or hands, alum and alcohol for the prevention of bed sores, etc. Two single bath blankets are needed, preferably old blankets, as new ones are soon ruined by such use.

Roll the patient on her side while putting the single bath blanket under her, at the same time loosening all the bedding, that no time may be lost after the bath. Cover the patient with the other single bath blanket, removing the upper covers. Take off one side of the nightgown, turn the patient over upon her back, and remove the other sleeve of the gown.

Begin the bath by washing the face, ears, neck, and chest, having the water at the temperature the patient desires and *keeping it there*. Do not allow water to dribble from your hands and the wash cloth; have due regard for the eyes; do not be rough; neither err on the other side, and only wet the skin without any friction.

If the patient wishes soap used upon her face, clear water must be used to rinse it, otherwise a shiny appearance and an uncomfortable prickling follow. Wipe quickly and thoroughly. Wash the chest, abdomen, and arms next; warmer water is needed for the abdomen, and a little powdered borax put into the axillæ will correct the strong odor of perspiration frequently noticeable in bed patients. Wipe as before, rubbing the chest and arms briskly, powdering the axillæ again. Renew the basin of water, turn the patient to one side, and wash the back; after wiping, use the alum and alcohol or powder, rubbing well across the hips and back, where the greatest pressure comes. Put on the nightgown and turn the patient upon her back to wash the legs and feet; examine and clean the toe nails, and give the legs from the knees down an extra amount of friction. To finish the bath, put the patient upon a bed pan, pouring warm soapy water over the external genitals and the inner surface of the thighs; this cleanses them better and more quickly than in any other way. Clean the finger nails and comb the hair. The bed is then changed or brushed out, and is made, as before described. The whole bath may be given under the upper bath blanket; but by doing one portion at a time, only that portion is exposed, and this is, upon the whole, a more satisfactory way for patient and nurse. Male patients, except when very seriously ill, should be bathed.

by the ward orderlies; but when it is necessary for the women nurses to give the baths, the orderlies should always finish them.

When a new patient comes in, who has been long neglected, the routine of the bath may be changed to advantage by first putting a foot tub into the bed, having the water hot and soapy, and adding a spoonful of borax; the feet may then soak while the nurse washes the face, neck, arms, chest, and abdomen, when the dirt and tough skin of the feet may be easily removed with a stiff brush.

Refreshing Bath. — A refreshing bath, especially in very hot weather, is as follows: to a tub of water at 95°F. add aromatic sp. ammonia and sp. camphor $\bar{a}\bar{a}$ 3j alcohol or bay rum 3j and a handful of coarse salt.

Foot Baths. — Foot baths, 100°–110° F., are frequently ordered for colds, headache, or cold extremities.

When given at a different hour from the regular bath, the knees and tub should be covered with a folded bath blanket, to protect the bed covers from the moisture of the steam.

A teaspoonful of mustard may be ordered, to aid the hot water in dilating the blood vessels in the extremities; the mustard should be first wet with a small amount of water and rubbed to a paste, otherwise it will not mix with the large amount of water in the tub.

The foot bath should last at least twenty minutes and should be followed by brisk rubbing and the addition of a hot brick or hot-water bottle to the bed.

Baths for special purposes are ordered according to their temperature as follows: —

A hot bath may be from 100° to 112° F.

A warm bath may be from 90° to 100° F.

A tepid bath may be from 70° to 90° F.

A cool bath may be from 60° to 70° F.

A cold bath may be from 35° to 60° F.

A young baby's bath should be from 98° to 100° F.

Remedial Hot Baths. — Hot tub baths, vapor baths, or hot-air baths are ordered to induce perspiration and are much used with rheumatics or patients suffering from disorders of the kidneys. The effect of the hot-water vapor or air is to dilate the minute blood vessels of the skin and to stimulate the activity of the sweat glands by which certain amounts of urea and other waste products are carried off. In other words the skin is called upon to help the kidneys in their work of excreting poisonous waste material.

In giving these hot baths or sweats four points should be kept in mind; namely, to put a cold compress to the head, to maintain the proper temperature of the bath without burning the patient, to watch the condition of the pulse which may show a sudden increase in rapidity, and weakness, indicating collapse of the patient from the heat. A patient showing such signs should be taken from the bath at once. The nurse should always count and record the pulse before beginning any work for the hot bath; in this way she will know what the variation of the pulse is. There should be no guess work about it, and taking the pulse after turning or lifting the patient is not a correct guide for judging later variations.

Ordinarily the patient remains in the hot tub bath for twenty minutes, a bath blanket covering the tub to keep in the vapor; meanwhile another warm bath blanket must be in readiness to cover the bed and receive the patient.

The patient is lifted out of the tub with the bath

blanket covering her, is laid upon the warm bed and covered with extra blankets, and left to perspire for twenty minutes followed by a brisk rubbing under the blankets. The nightgown may then be put on and the blankets removed. Here is the fourth and perhaps most important point in the process; namely, restoring the body to dry warmth without exposure or chilling. A careless or unthinking nurse may, in a few seconds, not only undo all of the good of the hot bath, but may do infinite harm by allowing the chilling of the surface of the patient's body, which in turn throws back upon the already overworked or diseased kidneys a large amount of waste to be excreted.

As an inducement to perspiration hot drinks are given freely, such as hot lemonade, tea, or broth, or pilocarpine hydrochlorate gr. $\frac{1}{8}$ may be ordered. Pilocarpine being a powerful heart depressant, the nurse must watch the pulse closely after giving it.

In all cases where baths are ordered as remedial agents, the nurse must not leave the patient alone from beginning to end.

Alcohol Sweat. — An alcohol sweat is given in bed by putting under the patient first a long rubber sheet covered by a blanket, removing the nightgown, covering her with first a blanket, another long rubber sheet, and adding another pair of blankets.

Put a cold compress upon the forehead; put into the bed upon the blanket first covering the patient four hot bricks to each side and one to the feet. These bricks should be each in its own flannel bag and should never be put between the legs nor between the arms and side. Pour about a teaspoonful of alcohol upon each brick, beginning at the patient's left shoulder, pouring with the

left hand and turning up the blankets and under rubber sheet to cover the bricks as you go; then tuck all the upper covers underneath the edges to prevent any vapor escaping, at the same time slipping the hand under the bricks to be sure they are not touching the patient.

An extra half blanket should be thrown across the chest and tucked in closely about the neck. Give the patient as much hot fluid as she will drink, letting her take it through a drinking tube to avoid disturbing the covers. Hot lemonade, beef tea, flaxseed tea, or any drink she prefers, may be given.

As in the hot tub bath, the pulse should be recorded before and during the sweat, taking the patient out should she show signs of collapse. If the sweat is successful, with abundant perspiration, it may be finished in half an hour; but if the skin does not respond, it may be continued for not longer than an hour. Pilocarpine is often ordered as in the hot bath. Instead of the hot bricks many hospitals are provided with special apparatus for giving a regular vapor bath, the most common being a long cradle or two small cradles, making a canopy over the patient's whole body, under and over which rubber sheets and blankets are arranged in the same order as described in the alcohol sweat. A long rubber tube is attached to the spout of a kettle of boiling water, which is set over a bunsen burner or spirit lamp in a large pan resting on the floor, the tube carrying the vapor inside of the canopy. The vapor bath is sometimes given in a specially designed chair, when the patient is able to sit up, or may be given in an ordinary chair by putting the spirit lamp and kettle under the chair and surrounding the patient with a large rubber sheet and several blankets to prevent the escape of the vapor.

However, the danger from fire by this method is great, and the vapor bath in bed is more satisfactory.

A mustard foot bath may be ordered as an adjunct of the vapor bath.

In all cases the special points for the nurse to observe are the maintenance of sufficient heat to produce profuse perspiration, the avoidance of burning, observation of the pulse, and warmth with friction to prevent chilling upon removal.

Hot-air Treatment.—The hot-air treatment for rheumatism is usually carried on by means of especially constructed cylinders, suitable for a limb or the whole body, whereby the afflicted part is subjected to a baking process.

Such an apparatus should be thoroughly understood by a nurse before using it and patients under such treatment must never be left alone for fear of burning.

Sitz Bath.—The hot sitz bath is taken in a tub provided for the purpose, the patient sitting in the tub, the water covering only the hips and upper part of the thighs; the sitz bath is usually ordered in cases of delayed menstruation, retention of urine, or pelvic pain.

Tepid or Neutral Bath.—The tepid or neutral bath is being used to a considerable degree with the nervous and insane, in general as well as insane hospitals. It has been found efficacious even in cases of violent mania, and is particularly beneficial in cases of nervous irritability, being highly recommended for children who manifest nervous irritability when fatigued.

The bath, at 92° F., is continued from thirty minutes to four or five hours as ordered.

A rubber-covered pillow should be suspended at the

head of the tub, that the patient may lie in a comfortable position; the tub is covered with a bath blanket and the temperature of the water is kept constantly at 92° F.

Continuous Bath. — The continuous bath for cases of extensive burns or for surgical cases, with foul discharging wounds, may be ordered and continued for days. The stationary tub in the bath room must be used for such baths, as the drain is needed.

Especial provision for the patient's comfort must be made; the ventilation and temperature of the room need constant watching. Screens around the tub may be necessary to prevent draughts; there must be either a canvas hammock with rubber-covered pillows, or an old folded blanket or mattress pad put into the bottom of the tub, with a rubber ring under the hips and another for the head and shoulders, with a rubber-covered pillow securely adjusted to give a comfortable position. Frequently the tub is so short that the cramped position speedily becomes torture and every possible means must be used to relieve it. Whatever temperature is ordered for the continuous bath — commonly 100° F. — *must be maintained constantly*; not a single half hour should pass without testing the water, draining it off as it cools, and replenishing with warm water until the correct degree is secured; any great variation is dangerous and inexcusable.

A continuous flow in and out, at a certain degree, is almost impossible to maintain with the ordinary water supply.

The tub should be covered with a long rubber sheet, the rubber side down.

Once daily the water should be entirely drained off and the patient lifted out to have the toilet made;

dressings changed, an enema given, or other orders filled, while the tub is thoroughly cleaned.

The **Schott Bath** for nervous patients is frequently ordered. The bath at 100° F. has dil. hydrochloric ac. ℥iv and bi-carb. soda ℥viii added, the time varying according to the orders.

Special Baths. — In certain skin diseases, special baths such as bran, starch, or alkali of some kind are used. The bran bath is given by putting a quart of bran into a bag and allowing it to soak for half an hour before the bath is given; a starch bath is given by cooking half a pound of laundry starch until clear and adding enough water at 100° F. to make ten gallons.

The strength of the soda bath is determined by the doctor. There are a large number of medicated and elaborate baths which cannot usually be carried out in general hospitals or private houses. There is, however, a large increase in the use of baths of all kinds, which may lead to better provision for them in general hospitals.

Cold Baths. — Cold baths are often ordered for their tonic effect and are usually given as a shower or by an instant's plunge into a tub full of cold water, followed by brisk rubbing, which usually produces a refreshing glow and proves a stimulus for many hours.

Where patients complain of cold feet and legs, following a cold bath, it has been found a good plan to fill the tub with sufficient hot water to come halfway to the knees, when standing, then to give the quick shower and have the patient remain standing in the warm water while the body is dried.

Should the patient still have cold feet and hands, with blueness about the nails, the condition should be

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reported to the doctor, as there are some persons who cannot stand the low temperature.

Salt-water Baths. — Salt-water baths may be ordered, hot or cold. In either case, two pounds of sea salt to an ordinary bath tub of water are sufficient, the salt being dissolved in hot water before putting into the tub; never use any soap in a salt-water bath.

Hot and Cold Packs. — The hot or cold pack is old-fashioned treatment recently revived.

The hot pack may be ordered to allay nervousness and produce sleep, or to induce perspiration.

Cover the bed with a half blanket under the patient; a sheet or blanket is then wrung out of hot water as dry as possible and is wrapped closely about the patient, who is then covered with extra blankets, left in them for half an hour, and is afterward rubbed dry.

The sheet or blanket should be wrung in a clothes-wringer, never by hand; by so doing the rubber sheet is not needed to protect the bed and there is less danger of burning the patient.

The use of blankets is an extravagance, unless there be a number of old blankets on hand; but in private houses old blankets in abundance are seldom found and cotton sheets will answer the same purpose if quickly applied and covered with warm blankets.

The cold pack is also given to nervous patients or is used as a means of reducing temperature.

Cover the bed with a half blanket, wring a sheet out of cold water with a clothes wringer, envelop the patient, and, with the nervous patient, cover with a single blanket; for the fever patient, use no extra covers.

In either case put a hot brick or bottle to the feet if they are cold.

The Cold Sponge Bath. — The cold sponge bath is the most frequent means employed for reducing the temperature in fever patients.

There are few nursing duties which prove so conclusively a good, indifferent, or poor nurse as the various means they use of reducing temperature in fever patients.

The intelligent, quiet woman, who makes no false moves and avoids everything which may irritate the patient, will succeed where a fussy, noisy nurse gets only a mounting temperature.

The bed may be protected by a bath blanket or two bath towels tucked lengthwise under the patient's sides, and the pillow, by a good-sized piece of rubber cloth.

Take and record the temperature, pulse, and respiration. Remove the nightgown and bed covers, putting a towel across the loins; put either an ice cap or cold compress upon the head, and something warm at the feet, if they are cold. Use a foot tub or large pan for water, and an old soft towel for sponging — having, besides, two hand towels and a bath towel.

Have the water at 65° F. and keep it there, by either renewing it or adding ice.

Sponge the face, neck, and chest first, having the towel moist, but not dripping; the sensation of dripping water is startling and unpleasant to the patient, and the skin needs to be only moist, not wet. The cooling results from the process of evaporation. Wet the sponge very frequently.

Wring the two towels out of the cold water, wrap each around a lump of ice, and put them into the axillæ, being careful that the ice is sufficiently covered to protect the skin from freezing. Sponge the abdomen and

sides with long downward strokes, being especially careful to *avoid pressure upon the abdomen*.

Next sponge the arms all over with the same even downward strokes, and then sponge the inner surface of the arm, wrist, and palm of the hand for several seconds.

The large blood vessels of the arms and legs lie near the surface on the inner side, where the skin is thinner than on the outer side, and it has been found by many nurses that quicker results follow such a method of sponging.

Continue the sponging of the legs in like manner and finish by turning the patient on the side to sponge the back. Take the temperature and pulse. Usually this procedure takes 15 or 20 minutes and reduces the temperature sufficiently; if not, the sponging must be continued.

Ironing with Ice. — When ironing with ice is ordered, a flat piece of ice is wrapped with gauze or old linen and the ends of the cloth are grasped in the nurse's hand, while the same long even strokes are employed as above described.

In all cases the nurse must carefully watch and note changes in the patient's condition. The color and expression of the face and quality of the pulse are quite as important as the changes of temperature.

Pulse and Temperature. — The young nurse is much inclined to lay too much stress upon the temperature record to the exclusion of the pulse and other important signs and symptoms and continues sponging after the patient is nearing or in collapse.

When the sponging is finished, the skin is usually quite or nearly dry, but the nurse should be sure that

such is the case before putting on the nightgown and removing the bath blanket.

Special Points. — The special points to be remembered are quiet movements, keeping the water at 65° F. or less, giving more attention to inner surfaces of arms and legs than elsewhere, and constant vigilance for signs of collapse which are: sudden fall of temperature, increase of pulse rate, pallor, with blueness of the finger nails and about the mouth, and shallow respirations.

Sprinkling. — Sprinkling was first done by the nurses of the Bellevue Hospital, New York, and is an effectual method of reducing temperature when the patient is not made nervous and excited by it, and is employed when tubbing cannot be done.

Protect the bed with a long rubber sheet, putting an extra piece of rubber cloth at the foot of the bed to carry off the water into a large pan on the floor. Cover the rubber sheet with an old bath blanket or sheet (a patient should never be placed upon unprotected rubber of any kind). Roll two half blankets and put them under the edges of the rubber sheet, that the patient may lie in an improvised tub. Remove the nightgown, put a large towel across the loins, remove the upper covers, and elevate the head of the bed about eight inches.

Be sure that the arrangement of the rubber sheet will carry off the water into the pan below; put an ice cap or compress upon the head, and then, with a small garden sprinkler, filled with water at 80° F., begin sprinkling the arms first, holding the sprinkler only six or eight inches above the body. Gradually include the chest and abdomen and slowly raise the sprinkler higher, until the patient becomes accustomed to the sensation,

when ice should be added until the water is at 60° F. Fifteen or twenty minutes usually suffices for the sprinkling, when the skin should be dried and rubbers and blankets removed.

The Brand Bath. — The cold bath or Brand treatment of typhoid fever, commonly known as tubbing, was instituted by Brand of Germany, who ordered a bath of 64°–68° F. for fifteen minutes, every three hours, if the temperature rose to 101.5° F. by mouth or 102° F. by axilla, claiming that its good effects were the quieting of the nervous system, stimulation of the pulse, and lessening of mortality.

While tubbing has been extensively used, the orders are varied, some doctors having the water used at 75° F., and others ordering it for a temperature of 102° F. by mouth or 102.4° F. by axilla.

A portable tub is a necessity in giving a Brand bath. It should be brought to the bedside filled with the necessary amount of water at 75° F., and a supply of ice should be at hand for reducing the temperature of the water to the desired degree. Arrange a rubber-covered pillow for a head rest in the tub. Put on an ice cap or compress.

Remove the nightgown and all covers but a sheet, lift the patient with the sheet into the tub, add the ice, and keep up constant friction upon the sides, arms, and legs for fifteen minutes, meanwhile watching for signs of collapse, which should be a signal for instant removal.

To remove the patient, spread a dry sheet across the tub, put aside the wet sheet in the tub, lift the patient, carrying the dry sheet across the tub with her, and lay her upon the bed.

The dry sheet will absorb the moisture and the gown may be put on at once.

Put heat to the feet and give whiskey, $\frac{1}{2}$ ss, if it has been ordered.

The especial points to observe are quiet in preparation, the avoidance of excitement, two persons to lift that the patient may feel perfectly secure, the proper temperature of the water, keeping up constant friction, and the intelligent observation of the patient's condition.

The water should never be used a second time nor for another patient.

A young nurse cannot be expected to execute such a treatment with a very sick typhoid; she has neither sufficient experience nor judgment.

The Burr Bed-bath Frame. — The Brand bath may be given in bed either by the use of the Burr frame or by the improvised tub made of a large rubber blanket. The Burr frame is an adjustable one with a rubber-cloth tub attached. The rubber-cloth tub is first put under the patient and then the frame put upon the bed and the tub attached. Water at 75° F. from large pitchers is then poured over the patient and the ice added as in the portable tub. Friction and observation of the patient's general condition should be practiced as before. The water is removed by the use of a siphon and a large rubber tube carrying the water to the drainage pail on the floor.

A hard rubber syringe is always available for a siphon.

When no Burr frame is at hand, a large black rubber blanket may be put under the patient and then tied to the four knobs of the bed by putting a yard of strong bandage into each brass ring in the corners. Rolled blankets laid along the sides and at the foot under the

rubber will make a complete tub which with precaution may prove as satisfactory as the use of the Burr frame, with less trouble.

The water is siphoned off in the same manner. It has been found by experience that if the siphon is started as soon as the temperature of the water is at the right degree, by the end of the usual fifteen minutes most of it has run off and the removal has been greatly expedited.

Tubbing in bed is sometimes employed after a hemorrhage from the bowels to avoid the moving incident to the bath in the portable tub.

Daily Care of the Mouth. — The daily routine care of the mouth and teeth should be undertaken by the nurse when patients are too ill to use the toothbrush. This is particularly important in all fever patients. The collection of sordes in typhoid fever is a source of danger both to the patient and others and should be constantly watched and prevented. When a patient comes to the hospital in the early stages of a fever, the mouth is easily kept clean; but if, as sometimes happens, he arrives in the later stages, the teeth, gums, tongue, and the roof of the mouth may be entirely covered with a dark brown, thick, tenacious mucus which will take days to remove.

In removing, care must be taken not to break the mucous membrane and cause bleeding.

With a delirious patient, the nurse must guard her own fingers to prevent the patient biting. An excellent way of separating the teeth is accomplished by wrapping the prongs of a table fork with gauze thickly enough to make a good-sized wedge, which may be inserted between the teeth and held with the left hand. Appli-

cators, made of toothpicks or thin strips of wood of varying widths and covered with absorbent cotton tightly wound, should be used with whatever mouth-wash may be prescribed.

In typhoid fever or in any disease where the sordes accumulates rapidly, the mouth should be well cleaned at regular intervals, not less often than every four hours; with other patients twice daily is the usual routine, especial attention being given to the spaces between the teeth.

Keeping the lips anointed with a mixture of equal parts of lanoline and vaseline prevents the excessive dryness and fissures so painful and unpleasant in fevers.

The sight of a typical typhoid mouth, which has been neglected, is never to be forgotten by a nurse who understands its significance.

Combing the Hair. — Many women patients complain that few nurses comb their hair comfortably.

The hair should be kept parted from the forehead to the nape of the neck, each braid being combed by itself beginning at the end, holding the braid tightly in the left hand while combing with the right hand; when the braid is all combed out, hold the patient's head firmly with the left hand while combing the whole length of the hair.

Occasionally a patient prefers having her hair put upon the top of her head, as the braids on her neck annoy her. This can easily be done except with very helpless patients.

Combing and brushing the hair is very refreshing to many patients; this, together with bathing the face and hands, turning the pillows, smoothing out the wrinkles in the bed and nightgown, and thoroughly

airing the room, will often rest and calm a nervous, tired patient to a wonderful degree.

Washing the Hair. — Washing a woman's hair when she is able to go to the bath room is a comparatively easy task.

Divide the hair by parting from the forehead to the nape of the neck, comb out and bring forward to the top of the ear, braiding each half loosely, which prevents tangling and makes it much easier to handle.

Cover the head with a thick lather of melted soap, rubbing every part of the scalp and the braid; rinse well, and repeat.

If the hair is very dirty or has a sour odor, add a dessertspoonful of borax to the lather.

The hair of a bed patient may be easily washed by bringing the patient to the edge of the bed and resting her head upon a rubber ring with a drain attached, known as a Kelly pad, which carries the water into a drainage pan on the floor.

Vermin in the Hair. — The hair should have especial attention in the class of patients liable to be infested with vermin. When a new patient has her hair infested with vermin, the hair should be thoroughly wet with tr. quassia and a towel bound snugly over it, to remain six or eight hours or over night. This may be repeated, if necessary, as quassia is as harmless as effectual.

An application of vinegar will dissolve the mucilaginous substance which fastens the nits to the hair, and then a thorough shampoo will usually finish the task; but a careful daily inspection should be kept up for a week or more, as a second treatment or even a third may be necessary where the hair is very thick and heavy.

A head which has been neglected for years cannot be made clean and wholesome by one shampooing.

No ward nurse should ever cut the hair of a patient except under the orders of the head nurse.

Tangled Hair. — When the hair is a mass of tangles, and also has vermin, the latter must be treated first, otherwise every patient in the room and the nurse herself is liable to a like affliction.

After the vermin have been killed the tangled hair must be taken a little at a time and, beginning at the ends, slowly, gently, and with infinite patience combed out, each strand braided as it is finished.

With a very weak patient this untangling may take many days to accomplish.

To do this well, without irritating and hurting the patient, requires great skill, which comes only by long practice.

The Prevention of Bed Sores. — The prevention of bed sores in helpless patients is one of the proofs of good nursing.

After twenty years of hospital work the writer believes that less than one bed sore in every thousand cases of helpless patients is excusable.

Bed sores are due primarily to three causes: pressure, moisture, and lack of cleanliness. They occur most commonly in paralytics, chronic Bright's disease, and complicated surgical cases which are hampered by surgical apparatus; but they may occur in any patient and in any disease unless the skin is kept clean and dry, and is relieved of pressure. The back, at the end of the spine, is the most frequent place for bed sores, although they do occur in any part of the body subject to pressure, even on the back of the head and rim of the ear or on

the knees from the weight of the bed covers; consequently it is only by eternal vigilance that helpless patients escape them.

Relief of pressure by means of change of position, pads, air cushions, and rubber rings, is of first importance; then cleanliness and the application of some agent for hardening the skin, such as the well-known solution of alum and alcohol.

It should never be forgotten that the prevention of bed sores lies in the nurse's hands; she should never treat a bed sore unless ordered to do so, — her province is the ounce of prevention which is worth tons, not pounds, of cure.

The most difficult cases are those complicated with involuntary evacuations from the bowels and bladder, but even these may be controlled by good nursing.

The writer once saw a patient, an old man, weighing two hundred pounds, with a fractured hip, who had involuntary urinations and who lay upon his back for eight months, whose back, at the end of that time, was as smooth and healthy as a child's. Such a result showed good nursing on the part of dozens of nurses who came and went on day and night duty.

Again, a surgeon once told the writer that he wished to have a clinic of bed sores for his students, and was not only unable to get any material, but every head nurse in his hospital took offense at his inquiries. That also was good nursing, and any nurse who does such nursing may be forgiven for resenting an inquiry of such a nature.

The following measures were compiled by Mrs. Harriet Higbee after several years at the head of a very large medical ward, into which came many patients suffering

from months of neglect and often with bed sores of appalling size and character.

Mrs. Higbee's success in preventive nursing for bed sores was so unusual that her opinions set a standard for the guidance of every nurse who was trained under her.¹

"Many preventive measures for bed sores are familiar to us, as the soap-and-water bath for cleanliness, followed by rubbing with alcohol and dusting with boric acid powder and bismuth subnitrate in equal parts for dryness; the relief of pressure by means of air cushions, cotton pads, pillows, water bed, and frequent change of position where that is possible.

"In addition to these, there are a few measures, not generally used, that after a thorough test have proved very satisfactory. One is a simple, inexpensive contrivance used to relieve pressure of heel, elbow, and ear. It is a pig's bladder, filled two thirds full of either warm or cold water, as the case requires, tied securely, and placed under a cotton ring. The weight of the heel or elbow rests on the ring, and the tender point rests on the soft, fluctuating mass.

"If the skin is inactive, as in paralysis, or there is frequent or constant moisture from perspiration or involuntary evacuations of urine or feces, the alcohol, boric acid, etc., are of very little value. They do not prevent the absorption of the moisture by the skin, and its subsequent softness or excoriation, which is commonly followed by infection.

"In such cases the back should be washed with soap and water every six or eight hours, or after every involuntary evacuation, and thoroughly rubbed with a

¹ *American Journal of Nursing*, February, 1901.

small amount of some oily substance, as castor oil, camphorated oil, or a mixture like the following:—

Mutton tallow, 3j;

Olive oil, 3j;

Carbolic acid, 95 per cent, m.j.

“Render out mutton tallow on the back of the stove; do not brown it. Strain through piece of muslin; add the olive oil and carbolic acid; set dish into cold water, and beat its contents until set. This will make an ointment the consistency of vaseline, and it will keep indefinitely.

“If the skin needs a great deal of stimulation, camphorated oil, or better still, castor oil, may be substituted for the olive oil in the above recipe.

“When the part becomes excoriated, it should be cleansed, as mentioned before; not with soap and water, but with boric acid solution, normal salt solution, or sterile water; then gently painted with oxide of zinc ointment made into liquid form by the addition of olive oil, castor oil, and balsam of Peru in equal parts, or castor oil alone, and covered with a clean cloth fastened on with a binder. Gentle massage may be used around the excoriated surface with excellent results.

“The treatment of bed sores is usually directed by the physician. But if it is left to the nurse, she will find the following method helpful.

“If there is necrotic tissue or suppuration present, she may irrigate the cavity once daily with peroxide of hydrogen, — one glass syringeful, — followed by normal salt solution, boric acid solution, or sterile water. Then apply a hot boric acid dressing one inch thick, every four hours until the wound is clean. If the stimulation

of the tissues is needed, fill the cavity with a sterile dressing, saturated with balsam of Peru and castor oil in equal parts bovine, castor oil, or camphorated oil alone. When the depression is filled with granulation tissue, it can be treated as an excoriation."

CHAPTER V

WARD ROUTINE

IN the management of the nursing of a large number of patients a certain amount of system and order is needed for carrying out the daily routine; otherwise the work accumulates at certain hours, resulting in confusion and disorder.

This system and order of routine is capable of such administration that a very large amount of work may be accomplished to the advantage and comfort of the patients, or it may be carried on by such inflexible rule that both nurses and patients become mere machines and there is no comfort for any one.

The work in the early morning hours in the hospital, as in the home, makes the difference of a comfortable day or one of rush, hurry, and confusion.

The ward nurse should be in the ward and ready for work at a stated time, always reporting to the head nurse for orders before beginning work and learning what new patients may have arrived during the night, who will fall to her care.

After seeing that her toilet basket is filled with the necessary articles, she enters the ward with ventilation and temperature first in mind, seeing what litter, utensils, soiled clothing, or food need to be removed at once, and then seeing all the patients who are intrusted to her care, to learn their condition and needs before she begins the routine of baths and bed making.

Fifteen or twenty minutes spent in attending their wants and doing a little picking up and tidying the ward and putting empty beds to air, will save many steps and interruptions later. In deciding which patient shall be first attended there is only one rule to be observed; namely, that the sickest patients must have the first attention. The ward may present a better appearance by having the beds where convalescents are up made first, but therein lies the weak point of too much system. With a probationer in the ward the question needs no consideration, as empty beds are her especial work.

To observe intelligently, lies with the nurse herself, and she alone can school herself to habits of observation and economy of time and strength.

To "putter" over non-essentials, to take three steps when one will do, to see nothing except what she is told to look for, to wander about the ward in an absent-minded manner, and constantly to "forget" are poor foundations for any work and are particularly undesirable in nurses.

In beginning the toilet of the very sick patient see what the records for the night have been; such knowledge may lead to some observation of symptoms or condition while giving the bath which would have been overlooked without it.

If possible, always give enemas, douches, bladder washing, and such orders before beginning the bath.

Two full cleansing baths a week for cleanliness are the usual ward routine; but typhoids, rheumatics, and many other cases need the daily sponge, which is determined by the doctor or head nurse.

An abundance of hot and cold water, clean bed and body linen, and towels must always be at hand, and

when the toilet is done, the patient and bed should present a thoroughly finished appearance. When the nurse has several patients, and is hurried, she may save a little time by collecting the wash cloths as she goes along and then wash them all together in the bath room, using plenty of hot, soapy water and rinsing out all of the soap. Sour, smelly wash cloths and dirty combs and brushes proclaim a slovenly nurse louder than words.

The arrangement of the work differs greatly in all hospitals. In small private hospitals a nurse usually has a certain number of patients assigned to her care for whom she must fill every order, as she would in a private house; but in the larger hospitals, where from twenty to sixty patients in rooms and wards are under one head nurse, the work is divided by the senior nurses giving all medicines, and filling special orders, while the diets, temperatures, care of the patients and of linen, bath room, kitchen, and other ward routine are evenly divided between the ward nurses, according to the period of their training.

By such an arrangement, properly carried out, patients may receive a maximum of care with a minimum of confusion, but like any system this may be carried to such an extreme that nurses become imbued with the idea that their duty lies only within certain lines and patients suffer much unnecessary tedious waiting and annoyance because the nurses do not feel that every patient in the ward belongs to them. Nothing so detracts from a nurse's usefulness nor brings so disagreeable an atmosphere into the ward as the assumption that certain things "are not my work" and are therefore to be ignored. Such a spirit arises from pure selfishness which considers one's own personal comfort paramount to the patient's welfare.

Certain routine duties, such as the administration of medicines, taking and recording temperatures, pulse, and respiration, and all special orders, having a definite stated time, must be done by inflexible rule; the variation of a few minutes in caring for one patient, when it becomes multiplied by ten, twenty, or thirty patients, results in hours of irregularity often utterly defeating the object of the orders.

A large tray of regular medicines may be gotten out before the hour, covered with a clean napkin, and set in a safe place for twenty or thirty minutes while the nurse does other things, but the practice of doing this several hours before the time is all wrong.

If the ward is supplied with three or four thermometers, the nurse will usually have only one patient who needs watching while taking the temperature and she may take several at one time, thus saving much time.

The evening routine duties for the junior nurses in the ward are usually making the patients comfortable for the night, letting the patient brush the teeth or the nurse use some mouth wash, brushing out the bed, smoothing wrinkles from the sheets and nightgown, rubbing the back with alum and alcohol, brushing the hair, washing the hands and face, and turning and freshening up the pillows, taking away faded flowers and any accumulation of litter and, in the cooler weather, looking especially after the ventilation.

There are many things a nurse may do to induce sleep in a nervous patient, of which ventilation comes first. For a patient to try to sleep in a poorly ventilated room is useless, and such sleeplessness is often entirely overcome by thoroughly airing the room.

Hunger often causes sleeplessness. which may be

corrected by a very light lunch of bread and milk or anything the patient prefers, hot broth and a cracker sometimes proving better, the heat of the broth being grateful.

A tepid tub bath of twenty minutes, or a sponge bath, or bathing the spine with long downward even strokes, using water as hot as can be borne, may be tried.

When restlessness follows the taking of nourishment, a hot-water bag applied over the stomach may prove helpful, but above all the nurse should be very sure that her own voice and movements do not disturb her patients.

The faults of nurses, which give rise to delay and annoyance in the daily routine, are the habits of never putting things back into their proper place when through using them, and of putting away utensils and instruments without properly cleaning them. Omitting the wire from the hypodermic needle; leaving instruments damp, which become rusty; hard rubber syringes clogged and foul with oil; sticky, smeared medicine glasses; soiled towels for glasses and dishes; dirty toilet baskets, and smudgy, untidy clinical records,—all are included in the trail of nurses of this type, making their departure from a ward a relief to every other nurse.

No one ever does good work as a nurse who regards these details solely as drudgery instead of feeling that they are the necessary foundation for sanitation, and that one who does not recognize the disorder and dirt of utensils, when present, will certainly fail to recognize the disordered symptoms of her patients.

If the ward routine is carried out with precision and thoroughness, the sudden emergencies arising will not throw the whole ward into confusion, and nurses accustomed to planning their work ahead are not found hope-

lessly floundering in an accumulation of unfinished orders.

A young nurse assigned to certain duties may teach herself by carefully reviewing the events of the day and seeking to determine wherein she erred in her routine and might have saved her patients and herself time and discomfort.

The first seven years of a child's life are said to be the character-forming period, and the first seven months of a nurse's training build the foundation of her future career as a nurse; the habits and ideas she forms during those first months cling to her far closer than later experiences.

Food Service. — The weakest point in the majority of hospitals is in the food service.

Every good training school for nurses provides a thorough course in dietetics to its pupils, but it is admitted that the adjustment of the preparation and serving of food is only too often imperfect. In this little book nothing will be said of the preparation which should be learned from the diet teacher, but a few words upon the service, especially in cases where the diet is an important part of the treatment.

The kind of diet is determined by the doctor, as the medication or other treatment is prescribed, and it remains for the nurse to carry out the orders for food with the same exactitude that she would use in filling orders for medicines.

Ill-cooked, badly-served food is an almost unfailing cause of irritability in persons perfectly well, and it seems a strange contradiction that many nurses fail to remember it when providing for their patients. The way a nurse arranges a tray announces whether she has

had good home training, how tidy or untidy she is, and whether her instincts are those of refinement or otherwise.

A tray with common dishes, coarse linen, and plain food may be made more attractive, if spotlessly clean, than one with fine china and silver, which is mussy in appearance and bears unpalatable food.

The first requirement in good service is the right food. Where especial diet is ordered at stated times no substitution should ever be permitted, nor the time of serving vary. To allow food to stand and grow cold, while some other routine duty, such as dusting or folding linen is done, is an annoyance to the patient and a frequent cause of dissatisfaction with the hospital, which might be avoided.

An overcrowded tray, an untidy tray, with soup and other fluids slopped over the linen, a tray presented with the plate and knife and fork on the far side, the salt and pepper forgotten, the bread thick and uneven, the meat and vegetables piled in unsightly heaps, and the whole drowned in gravy, the butter showing signs of previous use, the food which should be hot in an underlukewarm condition, and the cold food the same, is an inexcusable state of affairs which should never occur in any hospital. While the ward nurses do not control the supply of food, they can do much to improve its acceptability in the way it is served.

The patient's hands and face should be washed or wiped with a damp cloth before and after each meal. If the trays are without legs to support them, and the patient is able to sit up in bed, a feather pillow across the knees makes a good support for the tray and keeps it from slipping; back rests and pillows should be ar-

ranged for comfort that the patient may enjoy the meal, not dread it by reason of discomfort.

Patients may be able and prefer to feed themselves, who are unable to sit up but who can take their food while lying on one side; for such, the bedside table should be adjusted low or the tray put upon a chair or table low enough for the patient to see the food and not left to struggle with a tray upon a table so high he cannot see his food. In such cases, an extra napkin or clean towel should protect the bed and if necessary, a long, bent drinking tube be provided for fluids. The helpless rheumatic, paralytic, or otherwise disabled patient, who must be given all nourishment by the nurses, should call forth from every nurse infinite patience and sympathy; anything more pitiable can scarcely befall a human being.

Such a patient should lie flat upon the back to avoid fluids running from the side of the mouth; if allowable, an extra pillow under the head eases the patient and makes the feeding much easier for the nurse. Cover the chest with a napkin, providing another for wiping the mouth. Use a drinking tube for fluids or, if the patient prefers, use a spoon, giving the liquid very slowly. Do not cut the meat all at once, but cut it as the patient is ready, and ask him to state his preference in the order in which he wishes it. Do not use a spoon where a fork is usually called for, as many helpless patients are sensitive about their dependence and object to being served like small children. Be very careful, in putting the fork or spoon into the mouth, to avoid smearing the lips or face; wipe the lips often, and wash them when the meal is over. Bread for such patients is best buttered and cut in strips before bringing to the bedside.

When patients are put upon liquid diet, the cup or glass should always be brought upon a small tray or plate, and never carried in the hand. If possible, let the patient drink from the glass as more comfortable and palatable, lifting the head by slipping the left hand and arm well down under the uppermost pillow and giving the fluid slowly. All patients should wipe or have the lips wiped after drinking, especial attention being given to the corners of the mouth in typhoid fever or any condition when the patient is too ill to do it for himself.

A patient with little appetite is often persuaded by the nurse to take the needed nourishment by judicious management, but the nurse must be perfectly sure the tray contains palatable and attractive food and that his reluctance be not due to any fault of the service. An abundance of drinking water should be provided, but not left to stand in pitchers, either in the wards or private rooms. In many hospitals at a regular time, usually ten, two, six, and ten, water is passed to all patients, thus avoiding the possibility of very sick and helpless patients being overlooked.

The New Patient. — The reception given the new patient is of great importance, both to the patient and the hospital. Nothing could be more depressing, or produce a more lasting impression, than for the new patient to be left waiting alone, with busy nurses coming and going who seemingly ignore her existence; if by force of circumstance the new patient must be kept waiting for a short time before a nurse can attend her, then a few words of explanation courteously given will remove the unpleasant suggestion that the new patient is only a "case" and therefore not welcome.

Each hospital has an established custom of recording

the new patient's arrival, certain entries of temperature, pulse, and respiration, established routine concerning baths, diet, and disposal of clothing and valuables, which should be observed with the greatest care.¹

Probably more disagreeable impressions, more justifiable criticism, and more annoying confusion arise from the experience during a patient's first day in the hospital than at any other time, most of which could be avoided were more thought given to making the new patients feel they have come among those who are deeply interested in their welfare and ever ready to lend a helping hand for their comfort.

The room or bed should be in perfect order, with no possible suggestion of its previous occupant, the patient shown about the bath room and lavatories, the lights, the system of calling the nurse, the hours for meals, the usual hour for the doctor making rounds, the time night and day nurses change, and to whom complaints should be made. All these bits of information, every patient who is not desperately ill wishes to know, and if the knowledge is volunteered, it gives her a comfortable sense of friendliness.

A nurse going to attend the new patient's first wants should always learn the patient's name before addressing her, and then call her by name and introduce herself, which bridges over the first awkward moment; to enter the room without any introduction whatever is lacking in ordinary civility and stamps a nurse as ill-mannered. However, if a patient is seriously ill, and suffering, the nurse should stand upon no ceremony, but slip into the

¹ **TEACHER'S NOTE.** — The established routine custom of receiving new patients and many other duties may be outlined upon the blackboard in class and all nurses required to make notes.

work at hand as quietly and with as little "fuss" as possible.

The young nurse frequently errs in allowing her curiosity to let her ask the new patient or other patients personal questions, which should be absolutely forbidden. The personal affairs of any patient should be respected and guarded; they are no concern of any nurse, outside of the illness from which the patient suffers, and again, no nurse should discuss or carry tales about the illness of one patient to another. If leading questions are asked, the nurse may answer respectfully that nurses are forbidden to discuss such matters.

The observation of the patient's physical condition is especially observed when undressing her and giving the first bath. Especial directions for such observation are given in the chapter on symptoms.

CHAPTER VI

TEMPERATURE, PULSE, AND RESPIRATION

PREPARATORY LESSON: *Anatomy and Physiology for Nurses*, by Diana C. Kimber, pp. 109-115, 135-141, 196-198.

THE normal temperature of the human body is 98.4° F., which is not affected by changes in the atmosphere, but remains the same in health during winter and summer.

The heat of the body is dependent upon certain constant chemical changes, which are a form of oxidation or burning, for which food provides the fuel. The production of heat is balanced by the loss of heat, principally through the skin, and this balance must be maintained to preserve health. During exercise oxidation is increased and the temperature elevated, while during sleep oxidation decreases and the temperature falls.

Methods of taking the Temperature. — The temperature of the body is ascertained by means of the clinical thermometer, which should be tested and known to be accurate before using. The temperature is most frequently taken by mouth. The thermometer should be clean and the mercury shaken down several degrees below normal. The patient should moisten the lips with the tongue, and the bulb of the thermometer be placed under the tongue, with the lips firmly closed, and left there for at least three minutes, the patient being warned to be careful about biting and breaking the bulb. The temperature may be taken also by the rectum or vagina, where it usually registers one half

a degree higher than by mouth. The thermometer should be oiled and inserted two inches into the rectum or vagina.

The temperature of infants and small children should always be taken by the rectum. A thermometer used for rectal or vaginal temperature should be kept separate and never used for taking the temperature by mouth. The temperature may also be taken in the groin or axilla when the patient is sleeping, delirious, or if for any reason there is difficulty in breathing through the mouth. The axilla should be wiped perfectly dry, and the arm held in place across the chest to keep the thermometer in place. An axillary temperature usually registers $.3^{\circ}$ less than the mouth temperature. In a patient much emaciated a correct axillary temperature may be impossible to secure, as the cavity is not sufficiently closed to exclude the air; in such cases the temperature should be taken in the rectum.

Variations of Temperature. — The temperature normally varies not only with the locality in which it is taken but with the time of day, there being a difference of a fraction of a degree between its lowest time, about 2 A.M., and its highest time at 5 P.M. Age also affects the normal temperature. An infant or young child will usually have one half or one degree higher temperature than an adult, while in old age a slightly subnormal temperature is not uncommon.

After taking food the temperature will be slightly elevated, especially if hot foods and stimulation are taken, or lowered after iced drinks or cold food. Persons of nervous, excitable temperament are subject to elevations of the temperature from very slight disturbances. Mental excitement frequently produces sudden

elevations of temperature, especially in hysteria or with such patients as are suffering from fever from any cause, as typhoid fever, pneumonia, or any acute disease.

On the other hand, persons suffering from melancholia or any other form of mental depression usually have a corresponding depression of temperature.

Recording Temperature. — In taking the temperature, both the time and place of taking must be recorded; the time should be at regular stated hours, and unless otherwise recorded, it is understood to have been taken by mouth. Delirious and sleeping patients must not be left alone while the temperature is being taken.

Care of Thermometers. — Perfect cleanliness must be observed in the care of thermometers. After using, they should be washed in soap and water, rinsed in clear water, and kept in a solution of 1–2000 bichloride of mercury, or a 5 per cent soda solution. A drinking glass with a piece of absorbent cotton laid in the bottom is the easiest way of keeping them while not in use. They should be rinsed in clean water before being put into the patient's mouth.

Every ward should have two or more thermometers for taking rectal temperatures, which should be kept apart, in a colored cup or glass which is plainly marked "Rectal Thermometers."

Indication of Disease. — A deviation of one degree or more from the normal temperature, either above or below, may be regarded as an indication of disease, the danger being in proportion to the distance from the normal; a low temperature is, however, more dangerous than the same number of degrees above.

The following terms are most commonly used in describing the variations of temperature:

Algid collapse	—95° F.
Collapse	95–97° F.
Subnormal	97°–98° F.
Normal	98.4° F.
Pyrexia	99.5°–105° F.
Hyperexia	105° +

Fever. — Fever is a condition in which the temperature of the body is raised above the normal, and there are also present quickened circulation, disordered secretions, and marked tissue waste. The quickened circulation in fever usually maintains a fair ratio with the elevation of temperature; a rise of one degree Fahrenheit being attended with an increase of eight or ten beats per minute of the pulse, although there are notable exceptions, such as in typhoid fever, when the pulse is less rapid than in scarlet fever with the same elevation of temperature, while in peritonitis a rapid pulse and low temperature may be present and is considered an alarming condition. A temperature of 105° + F. may be regarded as an indication of extreme gravity, although the danger depends much upon the nature of the disease from which the patient suffers and the length of time during which the temperature is elevated. Thus a patient suffering from sunstroke, with a temperature of 105° or more, is not in so grave a condition as a typhoid patient, who will have the elevated temperature for a long period. Therefore, a high degree of fever may be present for a short time without grave danger to the patient, while a lower degree maintained for a longer time would prove to be of extreme gravity.

Fevers are spoken of as continuous, intermittent, or remittent, according to their course.

In the acute diseases temperature descends from the

abnormal elevation by lysis (gradually) as in typhoid or scarlet fever, or by crisis (abruptly) as in pneumonia or sunstroke.

Subnormal Temperature. — A subnormal temperature is apt to occur following the sudden fall of temperature in the crisis of pneumonia, in the various forms of anæmia, in depressed mental conditions as before mentioned, in certain acute diseases such as cholera, cholera morbus, and cholera infantum, and in typhoid fever resulting from perforation of the bowel and hemorrhage. Any degree of temperature lower than 97° F. from whatever cause in any patient, may be regarded as indicating an alarming condition.

The rules for converting the degrees of one thermometer scale into another are: —

Fahrenheit into Centigrade, — divide by 9, multiply by 5, and subtract 32.

Centigrade into Fahrenheit, — multiply by nine, divide by 5, and add 32.

PULSE

Wherever an artery approaches the surface of the body, a distension or pulsation may be felt, which we call the pulse. Each pulse beat is produced by a contraction of the heart known as the systolic action of the heart.

The pulse is a most valuable guide in disease, as it varies with the condition of the heart and affords an accurate index of the force, rate, volume, and rhythm of the heart and the condition of the arteries.

The radial artery at the wrist, owing to its accessible position, is usually employed to count the pulse, or if this becomes imperceptible, the temporal, femoral, or

carotid may be used, the large arteries retaining their pulsation longest.

With children the pulse should be counted at the temporal artery during sleep, as it is difficult or impossible to count a child's pulse when it is awake.

Pulse Rate. — To find the frequency of the pulse, place two or three finger ends upon the course of the artery, making sufficient pressure to feel the pulsation, and count for half a minute: any rate above 130 becomes difficult to count; a pulse rate of 160 can only be counted by one who has had long-continued practice. The pulse should not be counted when the patient has just made some extra exertion or is greatly excited.

The accurate observation of the pulse is one of the most difficult tasks a nurse performs, and to observe intelligently comes only by long-continued practice. The simple counting of the rate might seem easy, but the beginner will often count over three or four times, getting a different result each time. It is good practice for the nurse to count her own or some other nurse's pulse, experimenting with the effects upon the rate of sudden exertion, coughing, sitting, lying, running, and other movements.

The average rate in the healthy adult is 72 beats per minute; 105 to 120 in a child during its first year; 80 to 90 from 7 to 10 years; in old age it sometimes becomes more frequent than in middle life. There are many variations of rate in health, such as result from exertion, excitement, eating; it may be slower in the morning than in the afternoon; while the rate is increased by fever, heart diseases (with some exceptions), hemorrhages, and many diseased conditions resulting from weakness. In fact, nearly all abnormal conditions

of the body have some effect upon the pulse, more commonly increasing rather than diminishing the rate.

The force of the pulse is determined by the strength of the beat under the fingers.

The tension expresses the degree of blood pressure; *i.e.* in high tension, the artery is not compressible, while in low tension the artery is soft and compressible, indicating weakness and exhaustion.

The volume of the pulse must also be noticed; thus in low tension the volume may be large.

The rhythm may be altered by intermissions or irregularities. An intermitting pulse is one that skips a beat regularly or irregularly, often due to the functional disturbance caused by indigestion or the excessive use of tobacco or coffee.

Irregularity of the heart action may be in rate, force, or volume. Irregularity in rate and force are usually present in heart diseases, and are sometimes associated with intermissions. In digitalis poisoning several successive beats may be of different force or volume.

Ratio of Pulse to Temperature. — The frequency of the pulse varies greatly in different diseases, although the ratio of ten beats per minute additional for every Fahrenheit degree of temperature is the common rule.

A notable exception to this usual ratio is in the pulse in typhoid fever, which is slower in proportion to the temperature; a falling temperature and greatly increased pulse rate would be regarded as a very grave symptom; in fact, this separation of ratio in temperature and pulse is an alarming condition in any disease.

The pulse in peritonitis is hard, wiry, and rapid; in aortic stenosis the pulse is slow and of small volume.

A dicrotic pulse is characterized by a secondary wave

or oscillation which, to the inexperienced, would be considered another heart beat and be so counted. A dicrotic pulse is often present in typhoid fever. Any doubt of the rate may be corrected by placing the hand over the chest wall and counting the beats of the heart.

Effect of Drugs upon the Pulse. — Nurses should be observant of the effect of drugs upon the heart. All anti-pyretics depress the heart, while stimulants strengthen it if given in small quantities.

Unusual Conditions. — The unusual condition of two beats of the pulse to one of the heart, or one pulse beat to two of the heart, is sometimes found. In such instances the heart beat and pulse beat should be counted at the same time. A very slow pulse may be noted in brain tumors, meningitis, and as the effect of digitalis. The terms *hard* or *soft*, *bounding*, *wiry* or *flickering*, are frequently used to describe the variations of the pulse.

Nurse's Observation of the Pulse. — Too much stress cannot be laid upon the constant and intelligent observation of the pulse from the beginning to the end of training. No written description of the variations of the action of the heart will take the place of the clinical demonstration which lies before the nurse in every patient she meets, and she should make it an inflexible rule never to count a pulse without intently noting likewise its force, volume, tension, and rhythm; for by so doing she will gain a better understanding of the patient's real condition than in any other way.

The tendency of young nurses is to regard any variation of temperature as of more serious import than changes in the pulse, which is not the case. In any disease, if the action of the heart remain strong and regular, there is far less to fear in flights of temperature.

RESPIRATION

The average rate of normal respiration, or breathing, is from 18 to 22 in adults; in children 22 to 25; while in infants it is usually 30 to 35. In women the thoracic or chest type of breathing is more common, while in men abdominal respiration is the rule. The rate of respiration bears a rather uncertain relation to the pulse and temperature, although the ratio of four beats of the heart to one respiration is the usual rule. The rate of respiration in health is modified by position, exertion, or excitement, and is partly under control of the will.

In conditions where there is marked increase of temperature and frequency of the pulse, an increased respiration may be expected, but the ratio will be according to the exciting cause of the disturbance.

Respiration is greatly increased in pneumonia, phthisis, asthmatic conditions, some cardiac conditions, and often in hysteria. Belladonna increases the rate of respiration. Slow respiration is present in uraemia, brain tumors, and meningitis. Opium has a decidedly decreasing effect upon the rate of respiration. Respirations below 8 or above 40 per minute may be regarded as indications of danger.

Counting the Respiration. — Counting the respiration is best done by putting the hand lightly upon the chest or abdomen, according to the type of breathing, and at the same time watching the rise and fall of the chest walls. If the counting can be done unknown to the patient, greater accuracy is obtained, as the rate varies unconsciously if the patient is at all nervous. The respirations of an infant can be counted accurately only while it is sleeping.

Character of Respiration. — The character of respiration varies as much as the frequency. Respiration may be easy or labored, regular or irregular, deep or shallow, quiet or noisy. Difficulty in breathing from any cause is called dyspnœa. If the supply of air be entirely cut off, asphyxia or smothering results. In pneumonia the hurried short breathing is characterized by a smothered moan in expiration, while in inspiration the nostrils are widely dilated in the effort to obtain sufficient air. In asthma there is a wheezy, noisy expiration. In diphtheria or conditions such as growths of any kind making pressure or obstruction, the inspiration is difficult and is accompanied by a croupy sound in the effort to obtain air. If the obstruction is sufficient, the patient will make a sucking sound, the abdominal and chest muscles being greatly retracted. Croup is also accompanied by a loud brassy inspiration. The most peculiar and characteristic respiration to be observed is known as the Cheyne-Stokes respiration, which occurs in many diseases and may always be regarded as a danger signal. The breathing begins quietly and increases in rate and strength for six or seven respirations, when the order is reversed and each successive breath becomes quieter until they cease altogether for a few seconds, beginning again quietly. Stertorous, irregular breathing may be easily confused with the Cheyne-Stokes type until one has heard the latter.

In recording respirations, not only the frequency but any departure from the normal in character should always be noted.

Special Records. — Besides the regular hours for taking the temperature, pulse, and respiration, there are certain

special times and conditions arising at which these records should be made. In fever cases the temperature and pulse should be taken before, during, and after tubbing, sponging, or any method employed for reducing the fever. The observations before should be made before any moving, turning, or lifting has been done. The second record is made to determine how far the effect has been of the treatment, but meanwhile the nurse must have been observant of the pulse, ascertaining whether there has been any sudden change and keeping close watch of the color and expression of the face; the last record should be after the treatment is over; with a patient alarmingly ill, four or more observations should be made for each treatment. In all hot-air, hot-bath, or vapor treatments the pulse rate and character should be noted in the same way. With surgical patients who are prepared for anæsthesia or operation the preparations should be finished in time to allow the patient time for a short period of rest, when the temperature, pulse, and respiration should be taken and recorded. When the patient returns from operation, record should be made of the time of return and the temperature, pulse, and respiration be taken again, which give a fairly good idea of the patient's condition. There should also be made at this time a record of the condition of the skin thus, "color good, skin warm and dry," or "extreme pallor, skin wet and cold." A record of the pulse should be made at least every fifteen minutes for an hour or more after return from operation, it being a common occurrence for such patients to show signs of shock or collapse later.

CLINICAL RECORDS OR HISTORY SHEETS

Clinical records, or history sheets as they are sometimes called, vary with every hospital; but of whatever type, the records made by nurses, not only of temperature, pulse, and respiration, but of sleep, medication, diet, symptoms, and excretions, should be considered from three standpoints, viz.: absolute accuracy, intelligent observation, and clear expression.

It should always be borne in mind that all such records must be clear and definite enough to be easily understood by the doctor who may read them in the absence of the nurse who wrote them. Neither should explanations be needed to the nurse who follows. For instance, the records made by the night nurse must give such a plain statement of the patient's condition through the night that the doctor and the day nurses may easily understand it, and *vice versa*.

Where the patient is very ill and records must be frequent, great care should be taken about the time of the record. Many nurses are very careless about this point, and one may find a temperature recorded and medicine given written upon the same line, indicating the same hour, when in reality one or two hours intervened. Again, a number of items will be huddled together in a tangle almost impossible to decipher. The writing should be plain, the paper clean and free from blots and smears. The practice of erasing records, either to correct mistakes or improve the appearance, is one which should be forbidden. *No erasure of any kind should ever be allowed upon any patient's record.* If a mistake has been made, a pen with red ink should be used to draw a fine straight line through the words,

which shall in no way conceal the original entry, and then the correction should be made, in red ink also, on a line below or at one side, together with the date and signature of the nurse making it. The reason for this is that such records are often needed and brought into court for legal purposes, and if they show signs of erasure, they are worthless.

CHAPTER VII

ADMINISTRATION OF MEDICINES

PREPARATORY LESSON: *Materia Medica for Nurses*, by Lavinia L. Dock. Introduction.

A THOROUGH knowledge of the standard weights and measures and the terms used in expressing them is essential for the administration of medicines, and until this is mastered the knowledge of the classification of drugs and their physiological action is secondary to the nurse.

Two systems of measurement are employed, the Apothecaries' Measure and the Metric System.

In a few large hospitals the two systems are used, some wards using one and some the other, thus giving all pupils an opportunity of learning both.

The Metric System, which originated in France, is more accurate and is employed in certain departments of the United States Government and by scientific people generally; it is universally used in chemical laboratories.

During the Spanish-American War a very large number of nurses were much embarrassed by their ignorance of the Metric System, which is used exclusively in the Medical Department of the United States Army. It is desirable and necessary therefore for all nurses to understand both systems.

Every hospital medicine closet should contain a reliable dose book. These little books contain the dosage

in both measures and have also the antidotes for poisons appended, and nurses should early acquire the habit of referring to the dose book when in any doubt. It is impossible for any nurse to carry in mind the dosage for even the common drugs, and the frequent reference to the dose book saves time as well as giving security.

APOTHECARIES' WEIGHT

20 grains (gr. xx)	= 1 scruple (℥ j)
3 scruples (℥ iii)	= 1 drachm (ʒ j)
8 drachms (ʒ viii)	= 1 ounce (℥ j)
12 ounces (℥ xii)	= 1 pound (lb. j)

APOTHECARIES' FLUID MEASURE

60 minims (℥ l x)	= 1 fluid drachm (f ʒ j)
8 fluid drachms (f ʒ viii)	= 1 fluid ounce (f ℥ j)
16 fluid ounces (f ℥ xvi)	= 1 pint (O j)
8 pints (O viii)	= 1 gallon (C j)

APPROXIMATE MEASURES

60 minims	= 1 common teaspoonful	= f ʒ j
	1 dessertspoonful	= f ʒ ii
	1 tablespoonful	= f ʒ iv
	1 wineglassful	= f ℥ iss
	1 teacupful	= f ℥ iv

The beginner must be extremely careful to avoid confusing the drachm and ounce of weight with that of fluid measure.

Minims (℥) and drops (gutta, guttæ, abr. gtt.) are commonly used interchangeably, which is inaccurate. An appendix of the relation of minims to drops in medicinal liquids is a most valuable addition to Miss Dock's *Materia Medica for Nurses*, pp. 223-225.

ABBREVIATIONS

āā, ana (*ἀνά*) of each.

Abstr., *Abstractum*, abstract.

A.C., ante cibum, before meals.

Ad, up to, to amount to (the full phrase being quantum sufficit ad).

Ad lib., ad libitum, as much as desired.

Alt. hor., alternis horis, every second hour.

Alt. noc., alternâ nocte, every other night.

A.M., ante meridiem, before noon.

Aq., aqua, water.

Aq. dest., aqua destillata, distilled water.

Aq. pur., aqua pura, pure water.

Bis. ind., bis indies, twice daily.

C., *Cong.*, congius, a gallon.

cc., cubic centimeter.

Cap., capiat, Let him take.

cm., centimeter.

Comp., compositum, compound.

Conf., confectio, a confection.

Decub., decubitus, the lying-down position.

Dil., dilutus, dilute.

Dim., dimidius, one half.

Div., divide, divide.

Div. in p. æq., dividatur in partes æquales, Let it be divided into equal parts.

Drachm., drachma, a drachm.

Emp., emplastrum, a plaster.

Enem., enema, injection.

F., Fahrenheit.

Fl. Fld., fluidus, fluid.

Garg., gargarisma, a gargle.

Gr., granum or grana, a grain or grains.

Gtt., gutta or guttæ, a drop or drops.

Guttat., guttatim, drop by drop.

Inf., infusio, an infusion.

Inject., injectio, an injection.

Lb., libra, a pound.

Liq., liquor.

Lot., lotio, a lotion.

M., misce, mix.

Mist., mistura, a mixture.

N., nocte, at night.

No., numero, in number.

O., octarius, a pint.

Ol., oleum, oil.

Ol. oliv., oleum olivæ, olive oil.

P.C., post cibum, after meals.

<i>Pil.</i> , pilula, a pill.	<i>S.</i> or <i>Sig.</i> , signa, write — <i>i.e.</i>
<i>P.M.</i> , post meridiem, after noon.	Give the following directions.
<i>P. r. n.</i> , pro re natâ, as occasion arises.	<i>Sp. gr.</i> , specific gravity.
<i>Pulv.</i> , pulvis, a powder.	<i>Sp.</i> or <i>Spir.</i> , spiritus, spirit.
<i>q. 1 h.</i> , quaque hora, every hour.	<i>Ss.</i> , semissis, a half.
<i>q. 2 h.</i> , secunda quaque hora, every two hours.	<i>S. V. R.</i> , spiritus vini rectificatus, alcohol.
<i>q. 3 h.</i> , tertia quaque hora, every three hours.	<i>S. V. G.</i> , spiritus vini gallici, brandy.
<i>q. 4 h.</i> quarta quaque hora, every four hours.	<i>S. F.</i> , spiritus frumenti, whiskey.
<i>q. s.</i> , quantum sufficit, as much as is sufficient.	<i>Syr.</i> , syrupus, sirup.
<i>R.</i> , recipe, take.	<i>T. i. d.</i> , ter in die, three times a day.
<i>Rad.</i> , radix, root.	<i>Tr.</i> , <i>Tinct.</i> , tinctura, tincture.
	<i>Ung.</i> , unguentum, ointment.

The unit of the Metric System is the meter (39.37 inches), and all other terms are derived from it.

The subdivisions and multiples of the meter are in tens, the subdivisions expressed by the Latin prefixes and the multiples by the Greek prefixes.

“ DECREASING

meter (m.)

decimeter = one tenth .1

centimeter (cm.) = one hundredth .01

millimeter = one thousandth .001

INCREASING

meter

dekometer = 10 meters

hektometer = 100 meters

kilometer = 1000 meters " (Robb)

" WEIGHTS

" The gram (gm.) is the unit of weight.

1 milligram = .001 gram (gm.)

1 centigram = .01 gram

1 decigram = .1 gram

1 gram = 1. gram

1 dekagram = 10. gram

1 hektogram = 100. gram

1 kilogram = 1000. gram

" In writing prescriptions, the gram is not expressed. Thus, bismuth subnitrate 1." (Dock)

Capacity.—The liter (l.) is the unit of capacity, but for convenience the cubic centimeter (c.c.) is used, the liter being equal to 1000 c.c. The cubic centimeter (c.c.), the centimeter (cm.), and the gram (gm.) are the terms the nurse most frequently uses.

" APPROXIMATE EQUIVALENTS

1 cc. = 15 minims

4 cc. = 1 fluid drachm (fʒ j)

30 cc. = 1 fluid ounce (fʒ j)

1 gram (gm.) = 15½ grains

1 decigram = 1½ grains

1 centigram = ⅙ grain

1 milligram = ⅙ grain

1 litre	= 1 quart
1 kilo	= $2\frac{1}{2}$ pounds avoirdupois
1 cm.	= $\frac{2}{5}$ inch " (Dock)

TEACHER'S NOTE. — Written exercises in reading and taking orders should be a part of the class work of Junior pupils with all lessons in *Materia Medica*. The free use of the blackboard with discussions by the class will be found invaluable. No nurse should be allowed or expected to go on night duty until she is able to read and understand written orders. Before getting out any medicines pupils should have had lessons in the general classification of drugs and the various forms of preparation.

The administration of medicines should be regarded as a serious responsibility by all nurses. The beginner should be taught by the head nurse or some older nurse who thoroughly understands the work in hand; there should be neither hurry nor interruption, but time for questions and explanations.

Medicine Closets. — The general arrangement of the medicine closet should be explained first. The best closets for medicines are those made of glass and metal, constructed in two parts, the lower half being inclosed with metal sides and doors and being much deeper than the upper half, which gives a shelf for the medicine tray and glasses. These closets are, however, very expensive and the old-fashioned wooden cupboards made in the same shape with glass doors in the upper half may be used instead. If the inside is painted white and common window glass cut to fit the shelves it is an easy matter to keep the closets clean.

Uniformity in the size and shape of the bottles is essential as a matter of economy of space, for convenience, and for the appearance of the closet. If bottles are

uniform, the labels should be pasted at a uniform height from the bottom of the bottle; it is much easier to read labels in a straight line from left to right than to skip around with a variety of shapes and sizes.

Drugs should be classified in the closet according to their preparation, putting tinctures together, fluid extracts by themselves, and likewise solutions, mixtures, spirits, oils, pills, capsules, tablets, powders, etc.; then they should be arranged alphabetically, and getting acquainted with the medicine closet is an easy matter.

Where solutions for hypodermic use are kept, they should be in small, wide-mouthed bottles marked "For hypodermic."

Poisons should have either a distinct label or a small extra label marked "Poison."

All bottles containing drugs for external use such as liniments, antiseptic solutions, aqua ammonia, tincture of iodine, etc., should be put by themselves and marked "Poison, for external use only." It is not uncommon to see cough mixtures, gargles, and liniments on the same shelf in the same kind of bottles, a standing invitation to mistakes.

Tablets and pills are much better kept in small, wide-mouthed bottles rather than the usual pill and powder box with the sliding cover; the boxes are enveloped by the cover, consequently the cover, not the box, is marked, which makes confusion an easy matter; the boxes are easily soiled and break readily, allowing the contents to spill in the drawer or shelf.

Glass stoppers are much better than corks. Belonging to the medicine closet should be three or four small oblong, not oval, trays in two sizes; the oblong tray permits medicine glasses to stand in uniform straight

rows, while the oval tray compels two or more shorter rows, which is confusing.

The closet should be supplied with an abundance of graduated medicine glasses, several medicine and eye droppers, three or four teaspoons, glass drinking tubes, small pitchers for drinking water, several drinking glasses, more than one hypodermic syringe with needles, a small-sized dish-pan, and towels for wiping medicine glasses. Besides these there should be a number of small pots or jars for using with vaseline, ointments, or liniments, as the *medicine glasses should never be used for anything but the medicines which are to be taken by mouth*. The supply jars containing vaseline or ointments should contain a spatula, and when needed, a small quantity should be taken out into one of these small jars. The sight of a nurse carrying vaseline for anointing a catheter in a medicine glass is not calculated to inspire a patient with confidence in the cleanliness of her methods.

Bottles of liniment should not be carried away into wards or rooms, but the portion needed poured into one of these small jars.

Medicine glasses should never be washed in a stationary hand basin. They need the same care as would be given drinking glasses for the table; that is, washed in hot, soapy water, rinsed, and dried with a clean towel. When oils have been used, reserve these glasses until all others have been washed.

The medicine closet should be kept locked, the day nurses having a special place for hanging the key, but one night nurse should always carry the key with her.

No probationer, patient, ward maid, or man should ever be allowed to open the medicine closet.

The getting out of medicines is usually assigned to

one nurse, whose duty includes the cleanliness and order of the medicine closet.

The labels should be kept clean and uniform. It is not a good plan to have labels printed by hand, as few persons print well, and when new labels are required, the uniformity is lost. In writing labels, avoid the extreme use of abbreviations. One of the hardest things for the beginner to decipher is some of the extraordinary abbreviations of the medicine nurse. For instance, "Morph. Sulph." is a puzzle, while "Morphine Sulph." would be easily understood; also "Stry. Sulph." when written "Strychnia Sulph." cannot be mistaken for anything else. Write the names plainly with no flourishes, and use jet black ink, that they may be easily read by artificial light.

The renewing of labels should never be done by any one but a nurse who has had abundant experience in handling drugs, and is able to recognize differences in color, odor, or consistency as well as by the labels. Take the example of epsom salt, oxalic acid, and boracic acid crystals, which to a novice look almost exactly alike and only an expert can discern the difference. Belladonna and cantharides plasters are easily mixed; many of the tinctures look nearly alike,—all of which make it an easy matter for a young nurse to make disastrous mistakes if intrusted with renewing labels.

The cleanliness of the medicine closet should be perfect at all times; no spots or stains, no stickiness of bottles or glasses, and no confusion. The writer has dwelt at so great length upon the care of the medicine closet, feeling that it is the foundation of the accuracy needed for the administration of medicines.

Mistakes do not "happen"; they are the result of

some flaw of technique or of the individual, for which nothing can be of too much trouble to avoid.

Order Books. — The care of the order books and the transfer of orders to accurate lists for the nurse giving medicines belong to the head nurse or her substitute. Whatever system is used, it should be as simple and definite as possible, and the same system be used in all wards and departments of the hospital.

While it may be permissible for the head nurse to receive verbal orders for the patients, no pupil nurse should ever do so. All wards should be provided with order books into which, under the proper date and heading, the doctors write their orders; this practice obviates misunderstanding. When circumstances compel a nurse to carry out verbal orders, the order should be written by her in the regular order book and designated "verbal order, Dr. —." Any system or custom which minimizes the possibility of mistake is always commendable.

Recording. — The recording of all medicines given, together with the amount and time, should be done with perfect accuracy, never recording before the medicine is given nor leaving it to be done at some future time. Drugs given by hypodermic injection, inunction, inhalation, or rectum should be so designated; otherwise it is understood they have been given by mouth.

Where a drug is given with a view to immediate and specific effect, such as morphine for pain, record should be made of its first effects, and also later; and here again the statements recorded should be clear and definite, not rambling and hazy nor so abbreviated as to lack clearness.

Action of Drugs. — Nurses should in the study of *Materia Medica* become familiar with the physiological

action of drugs and learn to recognize the symptoms they may produce. This is especially important in opium and its preparation, strychnia, digitalis, arsenic (Fowler's solution), pilocarpine, belladonna, atropine, and corrosive sublimate (bi-chloride of mercury). Morphine is a frequent order, and its administration is too often left to the discretion of the night nurse. If the nurse is ignorant of its probable effects, she may give too much; a standing order for strychnia may produce decided symptoms such as nervous twitching of the muscles; pilocarpine, so often used as an adjunct of the hot-vapor bath, is a powerful cardiac depressant; atropine, or other preparations of belladonna, produce a rash and great dryness of the throat; but the greatest danger lies in the use of bi-chloride of mercury, because it is so commonly used externally in large quantities that young nurses do not realize that of a solution of 1-1000, one fluid drachm by mouth is a large dose.

Dosage. — Young nurses, or any nurse, giving a drug for the first time, should know the dosage and if in any doubt, find some person or written authority before giving it. In all hospitals there is always some available person to whom a doubtful question may be referred before a mistake is made.

Methods of Giving. — Medicines are given through five avenues, *i.e.* the alimentary tract (by mouth), the rectum, the lungs, the skin, and the cellular tissue.

Medicines given by mouth may be in liquid form, such as solutions, tinctures, fluid extracts, infusions, oils, and sirups, or in solid form as pills, powders, tablets, or capsules.

In getting out liquid medicines, the nurse will find that by wrapping a clean moist gauze sponge around the

base of the left thumb she will save herself many movements and much time.

First read the label before taking the bottle from the shelf with the right hand; take the medicine glass between the thumb and forefinger of the left hand, and with the little finger and side of the left hand remove and hold the cork; pour the liquid into the medicine glass, and wipe the edge of the bottle on the sponge around the thumb, always holding the label side of the bottle upward to avoid soiling the label, return the cork, read the label the second time, and return the bottle to its proper place. In this way the mouths of bottles are always wiped, and where a number of medicines are gotten out at one time, the time wasted by picking up and putting down a sponge between each dose is avoided.

Drugs in liquid form are diluted by adding water to the medicine glass, avoiding too much water, which makes it more difficult to take; the only exception to this rule being the acids and the preparations of potassium, which should be largely diluted, the iodide of potassium being given with two or three ounces of milk.

A small piece of ice, hot water, or brandy held in the mouth for a few seconds before taking will render the flavor of the drug less disagreeable; give the patient water to rinse the mouth after taking.

Where whiskey or brandy are nauseating, a few drops of lemon juice with a little sugar will lessen the disagreeable flavor.

A small section or more of an orange will remove the bad aftertaste more effectually than almost anything else except a small piece of bread, neither of which can be taken when the patient is restricted to a liquid diet. Oils may be taken in capsules if the patient can swallow

anything so large; if not, castor oil or cod liver oil may be given in sherry, in black coffee, or the froth of beer by putting part of the liquid into the glass, adding the oil, being careful to pour it into the middle of the liquid, thus avoiding the sides and edge of the glass, and then covering the oil with the remaining liquid. Some patients and children will take oil in milk arranged in the same way. By adding oil to hot milk, covering one glass with another and shaking vigorously, an emulsion is formed which many patients will take easily.

Great care must be exercised in giving liquids to seemingly unconscious patients. Sometimes by using a teaspoon and moving it from side to side upon the lower lip the patient will respond and swallow the liquid trickling slowly out of the spoon, but it must be done with extreme care.

Pills, capsules, and tablets are used to conceal the flavor of drugs and to give them in concentrated form, but many patients have the greatest difficulty in swallowing them. By putting pills, tablets, and capsules well back on the tongue and giving plenty of water after, they will usually be taken with no difficulty; and if this is unsuccessful, they may be concealed in bread, cake, marmalade, or jelly, or they may be pulverized and given in sirup.

Some patients do not mind a bad taste, who cannot swallow the smallest pill, while others will easily take the largest capsules and become much nauseated with unpleasant flavors.

Rice-paper wafers are less used than formerly for concealing powders. These papers are put up in boxes, ready for use, and are either square or round, about two inches in diameter. Take the wafer by one edge, dip

down and out at once in a glass of water, lay over a good-sized spoon, place the powder in the center, and fold over the edges of the wafer; fill the spoon with water and place the whole well back on the tongue, or drop the wafer, after filling, into the medicine glass full of water and let the patient take it with a large mouthful of water.

Effervescing powders should be given in half a drinking glassful of water and are to be taken during effervescence.

Insoluble powders, like calomel, may be given dry upon the tongue followed by a glass of water. Calomel is, however, given more commonly in small pills and tablets.

Pills and tablets should be used when freshly made, as they become extremely hard and insoluble by long standing, rendering them entirely useless.

Drugs in solid form should never be given to unconscious patients, nor by force to children, as there is danger in either case of the pill or tablet lodging in the larynx.

Rectal medication has been spoken of in the chapter on enemata, drugs being given by rectum either in solution, by injection, or in the form of suppositories.

Medicines are taken through the lungs by inhalation of the fumes arising from volatile drugs, such as ether, chloroform, aqua ammonia, eucalyptus, and nitrite of amyl. Ether and chloroform are given by special inhalers. With ether, oxygen is almost entirely excluded, while with chloroform a large amount of oxygen is necessary; consequently the inhalers are quite unlike in form. Nitrite of amyl is best given by inhalation from a soft linen handkerchief, and ammonia and eucalyptus by inhalation from a bottle. Especial care

should be exercised with all of the above-mentioned drugs about getting any particles into the eye; with chloroform and ammonia, both being strong irritants to the mucous membranes, the nostrils and lips should be anointed with vaseline.

The inhalation of steam, arising from water containing certain drugs, is another way of taking medicine through the lungs; also an atomizer may be used, which produces a fine spray.

Inhalations of oxygen in cases of gas poisoning and pneumonia are frequently ordered.

The oxygen is provided in a steel tank, the flow of oxygen being controlled by a stopcock; a rubber tubing connects with the tank through which the oxygen passes into a bottle of water and from the stopper of this bottle another tube carries the oxygen to the patient.

If the patient is very ill, and usually such is the case, an inhaler is attached to the tube and held over the patient's nose and mouth, this being continued at intervals until the patient shows signs of distress.

The atomizer is used for making local applications to the throat. Liquids are also applied to the throat by means of gargles, and in the case of the use of a caustic agent, such as nitrate of silver, a small applicator is used made by twisting a bit of absorbent cotton upon the end of a probe. The same kind of an applicator or swab may be utilized for clearing mucus from the throat.

Medication through the skin (inunction) is not a frequent order. The inunction of mercury in syphilis will be met more often than in any other condition, the mercurial ointment being applied to the axillary spaces and to the inner surfaces of the arms and thighs, where the skin is finer and softer.

A nurse giving inunctions of mercury to a syphilis patient should wear a rubber glove while applying it.

Cod liver oil inunctions are sometimes ordered for puny, poorly nourished infants, young children, and for tuberculous patients who are much emaciated. In giving cod liver oil inunctions, the tendency is to use too much oil, which is not only wasteful but offensive. With infants, rub the whole body, having the oil and the hands, as well as the room, comfortably warm; after five minutes of general rubbing, wipe the skin dry with a soft absorbent cloth, paying particular attention to folds and wrinkles, the spaces behind the ears and between the fingers and toes; an infant getting cod liver oil inunctions should not have an odor of the oil after the performance is finished.

With the tuberculous patients the axillary spaces and inner surfaces of arms and legs only need to be rubbed. Here again the excess of oil should be wiped away. Nothing can be more offensive than rancid cod liver oil, and submitting the patient to such an odor continuously is an unnecessary cruelty as well as unclean.

Subcutaneous (under the skin) or hypodermic injections are employed where quick action of a drug is desired, as in cases of extreme pain, in shock, or where a disordered stomach makes internal medication impossible.

Formerly, specially prepared solutions for hypodermic use were kept on hand in all hospital medicine closets, but this practice has been, or ought to be, wholly abolished, because all such solutions decompose on standing; and by evaporation the strength of the solution becomes increased, giving rise to the danger of overdosing, and it is impossible to keep such solutions clean.

The principal drugs, such as morphine, codeine,

strychnia, atropia, and digitalis, are all prepared in compressed tablets for hypodermic use.

Of the fluids given hypodermically, the most common are brandy, whiskey, ether, aromatic spirits of ammonia, and normal salt solution.

Before using the hypodermic syringe, a nurse should examine its mechanism in all parts. The best syringe is one made of glass, so perfectly adjusted that no washers or wrapping of the piston are necessary; the fine hollow needle should be straight; bright, not tarnished; sharp, not dull; and open, that the fluid may run easily.

After knowing that the syringe and needle are in good working order, the nurse must know that they are clean, that the solution, the patient's skin, and her own hands are all surgically clean; otherwise septic matter may be carried under the skin and abscesses or more serious inflammations result.

To clean the hypodermic syringe, draw five per cent carbolic solution in and out through the needle several times; after expelling all of the carbolic solution, use hot sterile water in the same way, rubbing the needle vigorously with a sterile sponge. If compressed tablets are used, unscrew the top of the barrel of the syringe, put in the tablet, and add about ten minims of sterile water; screw on the top with the needle, wrap the needle in a clean sponge, and while the tablet dissolves, clean the skin with soap and water, followed by alcohol; or put the tablet into a half teaspoonful of sterile water and let it dissolve while preparing the skin. Hypodermic syringes with washers are best managed by the latter method.

Turn the syringe needle upward and push up the piston until all air is expelled from the barrel and a

tiny drop of the solution appears at the point of the needle. Hypodermics are given in the chest or fleshy part of the arm or thigh, the joints and bony prominences being avoided. Take a good-sized fold of the skin between the thumb and forefinger of the left hand and thrust the needle in obliquely about one inch, withdraw very slightly, and slowly force the fluid out of the syringe. After withdrawing the needle, make pressure with a clean sponge for a few seconds and gently rub the surrounding skin to hasten the absorption of the drug.

When whiskey, brandy, or other fluids are used, instead of the compressed tablet, the desired amount should be put into a clean medicine glass, and the barrel of the syringe without the needle be thrust into the glass and the fluid drawn into it. On no account should the syringe ever be put into the bottle.

Hard lumps may often be felt after hypodermics, particularly where large amounts of fluid have been used and the patient has feeble circulation. If these do not disappear within an hour, a hot fomentation or an ice bag may be applied, or what seems to be still better, the skin may be painted with tr. iodine, the counter-irritation seeming to stimulate the activity of the surrounding capillaries and to lessen the danger of abscesses.

In cases of profound shock, where hypodermics are used repeatedly at short intervals, a nurse must be particularly watchful to avoid leaving such a condition too long.

Hypodermoclysis. — Hypodermoclysis and intravenous injections of normal salt solution are very commonly ordered, although the intravenous injections are never given by a nurse.

Hypodermoclysis (subcutaneous injection of salt solution) is accomplished by using a moderate-sized aspirating needle, which is a hypodermic needle on a large scale, attached to the rubber tube of a glass irrigator, or by using the regular aspirator with reversed action. In either case the apparatus should be kept sterilized together with towels, gauze sponges, small bottles of antiseptic solutions, and the salt solution. In well-ordered hospitals the entire apparatus, with everything needed, is kept ready for instant use at all times, as the order for its use is often the result of an emergency or of such an alarming condition that life might be sacrificed if time were used to sterilize and prepare the apparatus.

The strictest aseptic precautions must be carried out in every detail in preparing the patient's skin, exactly as would be done in any case for minor operation.

The glass irrigator should be hung not over four feet above the patient; it should contain one quart of salt solution at 118° F.; the irrigator should be wrapped in a heavy bath towel to retain the heat; after allowing the salt solution to run through the needle, it is thrust into the loose tissue below the breast or the abdomen or the buttocks, and from one to two pints are usually given.

Following the injection will usually be felt a large, tumor-like mass, and gentle massage should be given for a few minutes; this massage should never be given while the needle is still in the tissues as is sometimes done, as the needle may injure the soft part surrounding it and inflammation ensue.

The point of insertion should be covered with a small piece of sterile absorbent cotton held in place by collodion.

The giving of hypodermoclysis is not always done by the nurse, some doctors introducing the needle and leaving a nurse to finish, and others doing the whole of the treatment.

In intravenous injections, the preparations are made with the same care, but the salt solution is used at 101° F. and is injected directly into the vein; this procedure is, however, never done by a nurse, the danger being too great.

CHAPTER VIII

SYMPTOMS

The Nurse's Observation of Symptoms. — The value of the nurse is nowhere more evident than in her intelligence in the observation and recording of symptoms. To her the doctor must look for information upon what has occurred during his absence, and it is therefore of the greatest importance that she be able to discern the varying signs and changes which we know as symptoms. This ability to recognize symptoms comes only by practice coupled with intelligence. It is in no way a part of nursing to make a diagnosis, *i.e.* to determine the cause of the illness, but simply to report such signs and conditions as the nurse observes in the care of the patient during the doctor's absence. To be able to note these symptoms the nurse must understand what may cause them, and her observations may be of great value to the doctor in making a diagnosis or in the detection of malingering (shamming), which is sometimes carried to the extent of deceiving a whole medical staff. No one has a better opportunity than the nurse in discerning the real from the sham symptoms, but there is also great danger of her being mistaken; consequently it is much safer to accept the patient's statement of his subjective symptoms as correct rather than do him the injustice of doubting his word when he really is suffering. At the end of two or three years' training, the nurse learns to

discriminate, but as a beginner she must be exceedingly careful in her statements. Likewise she learns by experience to determine the essential from the non-essential in making records.

In recording symptoms the statement must be a simple direct statement of fact, not opinion, the greatest care being exercised to avoid exaggeration or under-estimation of the symptom recorded.

OBJECTIVE AND SUBJECTIVE SYMPTOMS

Symptoms may be either *objective* or *subjective*.

Symptoms are objective when evident to the senses of the observer, such as redness, swelling, high temperature, or disorders of locomotion.

Symptoms are subjective when felt or known only by the patient, such as pain, nausea, dizziness, or numbness.

Objective Symptoms. — From the moment of the patient's entrance into the hospital the nurse should take every opportunity of observing the objective signs of disease, this duty being especially important with an unconscious patient and with children.

The nurse first notices the apparent degree of illness, which observation necessarily is superficial, and when the patient is able to walk about, little can be observed beyond the general appearance: whether fat (obese) or thin (emaciated), and to what degree; pale or florid; and the mental attitude.

Face. — The facial expression (*facies*) to the doctor or older nurse is an important index to the patient's condition, the normal expression being changed by swelling or puffiness, paralysis, or an expression indicating extreme pain or weakness.

In strychnia poisoning the contraction of the muscles around the mouth give a characteristic ghastly grin, known as *Risus sardonicus*. Nearly the same expression may be seen occasionally in some painful abdominal affection.

Skin. — The color of the skin varies greatly in different diseases and conditions, being yellow in jaundice, pale in anæmia, white and waxy in kidney and heart diseases, flushed in fevers, cyanosed (bluish) in shock or collapse, and in Addison's disease it becomes a curious coppery bronze color.

The skin presents different characteristics to the touch, being dry and hot in fevers, cold and harsh in some kidney diseases, moist and cold in shock; in fevers the slight moisture first noticed in the palm of the hand is regarded as a favorable symptom.

Eruptions; Injuries. — Eruptions, scars, or abscesses should be carefully recorded, especially when concealed by the clothing; this point is particularly important with children. The peeling (desquamation) following scarlet fever may continue for many weeks and is the principal source of infection; consequently a nurse giving a new child the first bath should, before putting it into the water, look closely at the palms of the hands, between the fingers, at the soles of the feet, and between the toes, and at the scalp for signs of desquamation.

All bruises (contusions) or injuries of any kind or the presence of bed sores should be noted.

With unconscious patients, discolorations may appear from pressure and feeble circulation, which should be recorded as soon as noticed.

Sweating. — In extreme weakness, or after the fall of a high temperature, there may be profuse sweating.

Night sweats are characteristic of pulmonary tuberculosis. A high temperature with wet skin is regarded as more alarming than the same degree with dry skin.

In paralysis, the paralyzed part or a gangrenous part of the body will be felt cold.

The lips may be cyanosed (bluish) in all conditions where respiration is obstructed, and are dry and cracked in fevers.


Eyes. — In wasting diseases, such as tuberculosis, the eyes are sunken; while in exophthalmic goiter, the prominence of the eyeball is a characteristic symptom. Inflamed eyelids, especially in infants and young children, should be noted.

With an unconscious patient the pupils are often unequal, as in serious brain disorders, or they may be equally dilated, as from belladonna, or equally contracted, as from opium. Squint and frowning are sometimes seen in meningitis.

The symptoms of profound alcoholic intoxication and serious brain disorders are often so nearly identical that the inequality of the pupils is almost the only perceptible difference.

Tongue. — The tongue may be moist or dry, clean or coated, swollen, bitten or indented by the teeth. The coating or fur upon the tongue may be white, brown, yellow, or sometimes nearly black. In fevers the tongue is always furred or coated, and this coating, if allowed to accumulate, is known as sordes and may completely cover the teeth, tongue, and roof of the mouth. The appearance of the tongue in scarlet fever is peculiarly characteristic, being a bright scarlet color with swollen papillæ, and is known as the strawberry tongue. In diabetes the tongue is beefy and large; in typhus fever

swollen and livid, sometimes called mulberry tongue. Ulcerations of the tongue from stomach disorders, syphilis, or mercury poisoning may be present.

Throat. — Note any patches of white, gray, or yellow membrane  mucus in the throat. The patches of tonsilitis are white, and seemingly on the surface, while in diphtheria the patches are irregular, gray, and appear to be more or less sunken into the surface. The gums may be swollen, bleeding, or tender. A blue line upon the edges of the gums indicates lead or mercury poisoning. In noting the condition of the lips, tongue, and gums, notice at the same time the odor of the breath.

Position. — The position assumed by the patient may be of importance. The inability to breathe when lying down is common in both heart and lung diseases, and is known as orthopnea. Lying upon the back with the knees drawn up may indicate peritonitis. In pneumonia or pleurisy affecting one lung the patient lies upon the affected side, which affords better opportunity for the healthy lung to expand and do the extra work required of it. In colic, the patient may lie upon the abdomen. In hip-joint disease, the knee is bent because the thigh cannot be fully extended without great pain. In typhoid fever and other wasting diseases, the tendency is to slip down into the bed. Lying quietly is usually a favorable sign unless the patient is rheumatic and unable to move, or the quietude is due to weakness and exhaustion. In children with meningitis the head is sometimes drawn backward.

Restlessness. — Extreme restlessness is usually a danger signal, very often seen shortly before death. Picking at the bedclothes and subsultus tendinum, or jerking of the muscles, and hiccough are all grave indica-

tions. Involuntary twitchings or contractions of the muscles should always be carefully noted. They may be local or general, coming on suddenly or gradually, and vary from a slight spasm to a severe convulsion. In all kidney diseases and in pregnancy the twitching of muscles, particularly if accompanied with headache and disordered vision, should be reported to the doctor *without delay*, as they almost invariably indicate approaching convulsions.

Respiration. — In all diseases of the respiratory tract, special notice must be given to the character of the respiration, expectoration, cough, pain, and dyspnea (difficult breathing). The character, quantity, and kind of expectoration should be noted, the expectorated matter being known as sputum. A cough without expectoration is known as a dry cough.

A cough may be painful, dry, constant, or spasmodic, more at one time than another, relieved or increased by lying down or movement, hacking or long-drawn-out; the paroxysmal cough of whooping cough may be recognized by the peculiar whoop of inspiration. The hoarse, brassy sound of croup in children is caused by the spasmodic contraction of the glottis. Nearly all kidney and heart diseases are accompanied by a cough.

Sputum. — The sputum varies from the thick white mucus of the catarrhal patient to the profuse purulent yellow expectoration of the tuberculous patient.

In pneumonia expectoration is scant in the earlier stages and of rusty or prune-juice color.

In both gangrene and abscess of the lung the sputum is profuse and has a foul odor.

The sputum in pulmonary hemorrhage is frothy and pink.

Mental Condition. — The mental condition should be carefully watched. The patient may be depressed, perhaps indicating melancholia, or apathetic, anxious, excited, wandering, delirious, or unconscious. Note the kind of delirium, whether the low muttering or the noisy, screaming type, and whether constant or occasional. Complete unconsciousness, from which the patient cannot be aroused, is known as coma, and if prolonged for twenty-four hours, is usually fatal. Continued sleeplessness, with partial unconsciousness, and the eyes slightly open, is known as coma-vigil, and is also an alarming symptom.

Insomnia and Sleep. — Insomnia, or sleeplessness, is grave if of long duration. The amount and character of sleep should be carefully noted, never taking the patient's word for it, as we know from personal experience that in perfect health one's ideas upon the subject are often entirely erroneous. Sleep may be restful and continuous or disturbed and fitful. The patient may cry out or talk in his sleep, or have nightmare. Note should be made if the patient sleeps with the mouth open.

Voice. — Peculiarities of the voice may be noticeable. Hoarseness may arise from an ordinary cold, enlarged tonsils, or growths, obstructed nasal passages, syphilis, or chronic alcoholism known as a "whiskey voice"; lost voice being known as aphonia is sometimes an hysterical manifestation.

Aphasia or lost speech is characteristic of apoplexy or other serious brain disorders.

In children sharp night-cries are heard in hip-joint disease, meningitis, and hydrocephalus.

Incoherence of speech, dullness of comprehension,

lack of interest, slowness in response to questioning, should all be noted.

Appetite. — Anorexia (absence of appetite), and also excessive appetite, the amount and character of food taken, and the presence of excessive thirst should be noted. Nausea and vomiting must be noted as to time of occurrence and nature of vomitus.

Vomitus. — Vomitus contains the undigested contents of the stomach. Vomiting may be forcible or projectile, as in some brain affections; loud and strained, or quiet and without effort. Note the interval between taking food or medicine and the time of vomiting, whether accompanied by pain, and the character of the vomitus. Vomitus may contain bile, blood, or even fecal matter. The appearance like "coffee grounds" is often due to a small quantity of blood. The presence of fecal matter in the vomit (stercoraceous vomitus) indicates obstruction of the bowel, an alarming condition often requiring immediate operation.

Specimens of vomitus may usually be sent in small, wide-mouthed bottles for examination, but in case of suspected gastric (stomach) hemorrhage or fecal matter the whole amount secured should be sent in the basin, well-covered.

The Abdomen. — The abdomen may be swollen and distended either locally or generally, or may be hollowed out in wasting diseases. Flatulence (gas in intestine) is caused by the fermentation of the contents of the alimentary canal; and the accumulation of gas produces tympanites, or distended abdomen, always present in typhoid fever, and commonly occurring in peritonitis from any cause. An infant with colic may have tympanites. The presence of fluid may also cause the dis-

tension of the abdomen known as ascites. The discharges from the bowels and bladder should be carefully noted in all diseases, the time, character, and quantity being recorded.

The observation of the excretions may be regarded as quite as important as any or all symptoms, and in many instances is the principal means by which a diagnosis is made. A nurse should not only describe and record the character, quantity, and time of the excretions, but in most instances must secure specimens for examination in the laboratory.

Record should be carefully made of the first urination and bowel movement of a new patient.

Feces.—Nurses should be observant of the character of the feces with all patients, carefully noting any departure from the normal. In constipation the feces are hard and dry, usually dark-colored and infrequent.

By diarrhœa is meant looseness or liquidity of the feces, with increased frequency. Diarrhœa may be due to overeating, impure water or food, atmospheric changes, mental shock, drugs, or may be secondary to some disease, as typhoid fever, tuberculosis, or albuminuria. Diarrhœa may exist when the bowel is loaded with impacted feces. Such a condition is manifested by small evacuations which do not empty the bowel, and may be either liquid or dark, small, offensive masses. Tenesmus, which is a constant painful desire to empty the bowel without being able to do so, is characteristic of dysentery, and may be present in cholera morbus and in corrosive and ptomaine poisoning. In partial stricture of the bowel the caliber of the evacuation is very small. When complete stricture is present, the nurse should watch for and note the expulsion of

gas from the bowel; its entire absence is a grave symptom.

Intestinal parasites should be looked for, such as round, thread, or parts of tapeworms.

In typhoid fever the bowel movement is yellow and liquid with a characteristic "typhoid odor," and at any time may show blood or blood clots due to intestinal hemorrhage.

Many mistakes are made by nurses in regard to the presence of intestinal hemorrhage in typhoid fever bowel movements. A large amount of blood may be lost which is not passed at once, and becomes very dark-colored and of tarry consistency. This the nurse may not recognize as a hemorrhage. Special care should be taken in estimating the quantity of blood present in any evacuation containing hemorrhage.

The fecal discharges in infants and young children are among the most important indications of disease, the undigested milk, curds, and green, slimy feces showing indigestion accompanying many diseases peculiar to children.

Drugs, commonly iron or bismuth, cause very dark fecal discharges, while in jaundice the bowel movements are very light-colored, sometimes almost white.

In dysentery the stools at first contain feces, but later become grayish mucus containing blood and even pus, the evacuations being accompanied with abdominal pain and tenesmus, and occurring from five to twenty times in twenty-four hours.

Rice-water discharges always accompany Asiatic cholera and sometimes occur in extreme cases of cholera morbus.

Fecal Specimens. — In saving specimens of fecal

matter it is usually better to send the specimen, as it is passed, in the bedpan, to the laboratory. To disturb it by putting a small quantity into another utensil defeats the object for which it is secured, and is not satisfactory. The bedpan should be perfectly clean before using, and should be closely covered by a double-faced rubber cloth to control the odors. If some time must elapse before the examination, it should be put into a safe place out of doors.

When a young nurse observes anything unusual in a bowel movement, she should, before emptying it, call the attention of the doctor or the head nurse to it.

Urine. — Urine is a transparent, watery fluid, amber-colored, acid reaction, specific gravity 1020, with characteristic "urinous" odor. Each of these characters may vary somewhat within the limits of health. The transparency may be diminished by mucus or deposit of salts. In disease the urine may be clouded by pus. The color depends largely upon the amount of water taken. Abnormal coloring may be derived from food or medicine, or be the result of some diseased condition. In fevers the color is high, while in the copious flow in hysteria or diabetes it is very light.

Reaction. — The reaction of normal urine is acid, but it is frequently alkaline after a meal.

Constituents. — The chief constituents of urine are water, urea, uric acid, coloring matter, and salts. Of these urea is by far the most important, being the chief solid waste product of the body.

"The elimination of urea is the special work of the kidneys, and if for any reason they fail to execute their work, the accumulation of urea leads to termination of life." (Kimber.)

After violent exertion or in warm weather when there is profuse perspiration, the urine is scanty and high-colored. In cold weather urine is more profuse; the quantity, however, in health, depends largely upon the amount of fluid taken. The normal quantity of urine passed in twenty-four hours is between 40 and 50 ounces.

Appearance and Odor. — The presence of red or yellowish deposit in urine which has stood for some time, which may have been accompanied by a painful micturition (dysuria), is due to an excess of uric acid. Urine which is loaded with urates becomes cloudy after standing in a cold room. Certain drugs influence the urine. Turpentine imparts an odor of violets, and if continued in sufficient quantities, produces strangury or hæmaturia. Carbohc acid and salol make a smoky urine.

Retention, Suppression, and Incontinence. — Retention of urine means that the kidneys have secreted the urine, which is retained in the bladder because for some reason the patient is unable to pass it. Suppression of urine (anuria) means that no urine has been secreted by the kidneys. Incontinence of urine means that the patient is unable to retain the urine in the bladder. Incontinence of urine not unfrequently occurs when there is an overfull bladder, the flow being simply the "running over" of the bladder.

Recording. — These three terms should be thoroughly understood by a nurse before attempting any records on the subject. In describing and recording urine, the time, quantity, color, and presence of sediment should be noted.

Abnormal Constituents. — The chief abnormal constituents of urine are albumin and sugar. The nurse should learn under an instructor in the laboratory to

examine normal urine and to test urine for albumin, sugar, bile, and pus.

In private duty nurses are frequently required to test urine for albumin and sugar, but seldom for any other abnormal constituent.

Microscopical examination should be a part of a nurse's laboratory work, but simply as a matter of increasing her understanding and not for practice.

Specimens of Urine. — Specimens of urine are ordered from nearly all patients. Such specimens are examined microscopically and tested chemically in the laboratory for diagnostic purposes.

The order for the nurse may be for a single morning specimen, for a twenty-four-hour specimen, for a catheterized specimen or not, and may be a standing order to be continued for some time.

Receptacles. — Bottles of varying sizes, containing not less than six fluid ounces, should be provided for specimens of urine and used for nothing else. The same may be said of the wide-mouthed bottles used for sputum or vomitus. Such receptacles should be of characteristic size, shape, or color; the practice of indiscriminately using ordinary cups or glasses intended for food for specimens of any kind is not only unsanitary but profoundly disgusting to any decent stomach. Bottles for urine should be thoroughly rinsed in cold water, followed by hot soapsuds, and then boiled for ten minutes, after which they should be corked with a plug of sterilized absorbent cotton until used. Ordinary corks should never be used. If specimen bottles for urine become cloudy, a half ounce of dilute nitric acid well shaken in them will usually clear the glass at once.

If a catheterized specimen is ordered, the end of

the catheter should be put into the bottle to receive the urine. In saving a twenty-four-hour specimen of urine the time should begin when the bladder is empty, *i.e.* directly after urination or catheterization. This time of beginning seems often to be confusing to young nurses, and they fail to see why the first urination should not be counted. If one wished to estimate the rainfall for twenty-four hours, one would put out an empty utensil to catch the rain, and not a vessel partly filled.

A gallon bottle, graduated by ounces, is the best receptacle for twenty-four-hour specimens. The bottle should be clean and corked with absorbent cotton. The urinal or bedpan used for collecting the urine for specimens should first be thoroughly scrubbed and scalded.

Chloral hydrate gr. xv or Formaldehyde 3j is sometimes put into the twenty-four-hour specimen bottles to arrest decomposition. All specimens should be labeled, giving patient's name, room or ward, date, and the name of the doctor.

Examination of Blood. — The microscopical examination of the blood is frequently done for the purpose of making a diagnosis in suspected cases of malaria, typhoid fever, and the various forms of anæmia.

A drop of blood is taken from the lobe of the ear with a needle upon a coverslide.

The ear should be washed with warm water and soap, followed by alcohol, and the needle and glass coverslide should be sterile. The doctor usually secures the specimen.

Catamenia. — In women patients the menstrual flow (catamenia) should be observed, noting pain if any, degree of flow, or any disturbance arising.

Shock. — The symptoms of the condition known as

shock or collapse call forth the keenest observation of the nurse. The terms shock and collapse are often used interchangeably, but commonly shock is applied to surgical conditions and collapse to medical cases, both meaning a sudden depression of the vital powers. The symptoms are a feeble rapid pulse, great pallor, cold moist skin, sighing shallow respiration, and extreme weakness; in many cases the mind is quite clear, this being true more often when shock is the result of injury.

A doctor or experienced nurse quickly recognizes the state of shock or collapse at the first glimpse of the patient, but the young nurse must learn it by months and years of carefully noting the general appearance of the patients as she works over them.

The instances where shock or collapse should be looked for especially are with the new patient, probably more often in emergency surgical patients than in any others; following operations, even the minor cases, a shock of a profound character may follow a simple operation. Hemorrhage following operation is not infrequent and is usually preceded by every indication of shock or collapse. Nurses should never forget that a patient may die of internal hemorrhage when there are no outward signs of blood.

Collapse is a frequent occurrence in typhoid fever, with or without hemorrhage from the bowels. As before stated, a typhoid hemorrhage from the bowels may occur which is not immediately expelled, but there will be the symptoms of collapse which are unmistakable.

Signs of shock or collapse should be quickly reported to the doctor, but meanwhile there are many things a nurse may do: first keep the patient, herself, and the room quiet; then secure extra heat, and practice every

possible means of restoring the warmth of the body. Produce friction (without exposure) to the arms and legs, rubbing always toward the heart. A hot drink, such as strong black coffee or tea, may be given, but drugs the nurse never gives without orders. The heat and friction should be steadily applied until the doctor arrives.

In cases of typhoid hemorrhage the friction should be applied mostly to the hands and arms, while hot-water bottles and warmed blankets are applied to the feet and legs.

SUBJECTIVE SYMPTOMS

Pain. — The most prominent subjective symptom is pain. In recording or reporting pain the nurse should give the locality, nature, time, and duration. Pain may be described as slight or severe, dull or sharp, burning, stinging, throbbing, steady, or spasmodic. The bone pain of syphilis is much worse at night. Pain may be relieved or increased by change of position or pressure.

Eyes. — Sensitiveness to light is seen not only in diseases of the eye, but in meningitis, brain lesions, measles, and other eruptive diseases. Lachrymation (secretion of tears) is often a premonitory symptom of measles. Disorders or loss of vision may be due to disease of the eye or brain lesions.

Smell and Taste. — The loss of smell and taste often occurs in severe nasal colds.

Hearing. — The loss of hearing may be present in all of the infectious diseases. It is common in typhoid fever, measles, and scarlet fever, and may also be due to the use of quinine.

Pain in the ear or discharge from it should be promptly reported.

Chills. — The patient's complaint of chilliness or cold, without any apparent reason, may be regarded as the sign of an approaching chill or rigor. The temperature should be taken, and will usually be found to be elevated. The temperature should also be taken during and after the chill, noting time, duration, and severity of the seizure. In renal colic, painful menstruation, gall stones, and many other conditions accompanied by extreme pain, chills of a very pronounced type may occur, known as nervous chills, but there is not always a rise of temperature following. Chills may mark the onset of acute diseases, such as pneumonia and malaria, or following surgical operations they may indicate suppuration.

In children a convulsion sometimes occurs at the onset of disease instead of a chill.

Sensations of chilliness sometimes occur after the reduction of high fever, as after sponging or tubbing a typhoid, or following a crisis in pneumonia. They may also occur as death approaches.

Any complaint of numbness or loss of motion should always be recorded, as well as dizziness, itching, or irritability of the skin, hyperesthesia (sensitiveness to touch), nausea, or other subjective symptom. Only too often such complaints are overlooked as trivial, to be recalled later as valuable indications, had they been properly noted.

CHAPTER IX

ENEMATA, DOUCHES, AND CATHETERIZATION

PREPARATORY LESSON : *Anatomy and Physiology*, Diana Kimber, Chapter XX.

THE introduction of fluid into the intestines is known as an enema (plural enemata), or clyster, the latter term being little used.

The purpose of the enema may be purgative, nourishing, or for medication, principally stimulating or sedative.

Soapsuds Enema. — The simplest form of a purgative enema is plain warm soapsuds given for constipation.

The enforced quiet and position of the majority of patients causes sluggish action of the bowels, which is commonly relieved with the simple soapsuds enema.

Should the rectum be packed with fecal matter, the injection of an ounce of warm, 100° F. olive oil in the evening, to be retained all night, followed by the soap and water enema early the next morning, is not only effectual but avoids straining and pain; such a procedure is often ordered when hemorrhoids are present or when there are stitches in the perineum or rectal walls, thus relieving any tension. It is also commonly used with lying-in patients, to whom straining to expel the contents of the rectum is extremely painful. Olive oil or any oil or drug used in as small a quantity as from one to four ounces should be given with the hard rubber syringe.

The patient should lie upon the left side, with knees bent and the bed protected. Expel the air from the syringe, slowly insert the oiled point backward and toward the left about two or three inches. *Never hurry nor use force.* After the piston has steadily forced the oil into the rectum, withdraw slowly; slight pressure with a folded towel upon the anus for a few seconds will relieve the desire to expel the oil.

As the olive-oil enema is given principally to soften the fecal matter contained in the rectum, it is always retained; when necessary, even so short a time as half an hour will be of some help, but several hours is much better.

Method of Giving. — The soapsuds enema was formerly given largely with the Davidson bulb syringe, but of later years the ordinary fountain syringe is used almost exclusively. The bulb syringe had the advantage of controlling the flow of fluid *if properly managed*. The fountain syringe, however, may be arranged to give a small stream slowly and steadily.

Place the patient upon the left side, with knees bent and the bed protected; have the bedpan under the bed ready for use; fill the fountain syringe with one or two pints of water 100° F. and make a frothy soapsuds with castile or ivory soap,—never use the common laundry soap, it is too great an irritant. Hang the fountain syringe low enough that its bottom is *not more than four inches higher than the patient's abdomen*; this will give a slow flow which may be stopped altogether by doubling the rubber tube should the patient be unable to retain it.

Oil the enema point and allow the water to run through until all air is expelled and the soapsuds runs warm,

pinch the tube just above the glass point, and insert as before described.

It is well to keep the rubber tube between the thumb and finger, at first shutting off the flow and allowing it to continue gradually until the patient grows accustomed to the feeling of distension. An enema which is hurried is never effectual and must be repeated, thus consuming far more time than if given slowly in the beginning.

The soapsuds should, if possible, be retained ten or fifteen minutes, but the bedpan should always be at hand to avoid accidents to the bed.

A high purgative enema may be ordered, which may be given in the same way with the addition of a No. 10 male catheter or rectal tube fastened to the enema point and introduced with extreme care.

Instead of soap, certain drugs may be used in the water, such as epsom or rochelle salts. Turpentine is sometimes ordered to relieve flatus. The turpentine, 3ss, is added to the stiffly beaten white of an egg, together with castor oil, 3ss, and the whole mixed with a pint of lukewarm water. The mixture properly made should make an emulsion, and there will be no irritation of the rectum or anus from the turpentine.

A glycerine enema consists of glycerine, 3ss, and olive oil 3j, given with a hard rubber syringe. The olive oil prevents any irritation to the mucous membrane. Glycerine excites peristaltic action, and the enema is usually successful without being followed by soap and water.

The high enema is more frequently ordered in giving medication or nourishment, and for such purposes the rectal tube attached to a small funnel and the fluid

slowly poured into it from a small pitcher may be used to better advantage than the fountain syringe.

Colonic Flushing. — The colonic flushing is given by putting the patient in the knee-chest position, that is, resting on the knees and chest with the buttocks elevated, the fluid used being plain warm water given with a fountain syringe and rectal tube.

The colonic flushing may be ordered for long-standing, obstinate constipation with impacted colon or preceding an operation where it is necessary for the bowel to be as empty as possible.

Enemata ordered for patients to be operated upon should be given at least two hours before operation, if possible, as there is liable to be a second bowel movement, which in the case of rectal or vaginal cases is not only annoying but dangerous if it occurs after operating has begun. Ordinarily purgative enemata may and should be given before the patient's morning toilet has been made.

Nourishing Enemata. — The continued use of nourishing enemata marks good or bad nursing in a very short time. With good nursing it may be carried on for weeks or months without distress to the patient; with poor nursing it may be necessary to discontinue it in a few days.

The use of rectal feeding is for patients who cannot retain their food for some reason, as in cases of cancer of the stomach, gastric ulcer, stricture of the pylorus, or persistent uncontrollable vomiting.

It may then be readily understood how essential are good conscientious methods for the maintenance of life.

A nourishing enema contains concentrated food in

some form, such as milk, eggs, and the beef extracts with pepsin or some pancreatic extract to assist in the assimilation. Brandy is commonly added to the food, as the milk is a bland vehicle which prevents the great irritation caused by brandy in water or coffee.

However, what may be ordered concerns the nurse less than how she administers it.

Special Points. — The special points to be observed are: —

1. Cleanliness, externally around the anus and in the fold of the buttocks.

2. Before each enema wash out the rectum with a pint of warm water.

3. Use a rectal tube, funnel, and pitcher; after use wash them in hot soapsuds, especially the eye of the rectal tube, scald with 2 per cent boiling soda water, drain, and fold all together in a clean towel.

4. Oil the tube with clean vaseline as far as it is to be inserted into the rectum.

5. Remember that any quantity over four ounces is liable to be expelled.

6. Unless otherwise ordered, the temperature of the food should be 100° F.

7. Give very slowly, withdrawing the tube slowly. Oiling the anus and applying a small pad of old linen wet with hamamelis (Pond's Extract) will allay any irritation arising from continued enemata.

With these precautions nutrient enemata may often be continued indefinitely.

Stimulating Enemata. — Stimulating enemata are a frequent order; brandy, normal salt solution, coffee, and various drugs, such as strychnia and digitalis, are most commonly used.

As before mentioned, brandy is so great an irritant that peptonized milk as a vehicle is necessary. In shock, an enema of strong black coffee, with or without brandy, is often ordered, but the most common practice is the use of hot normal salt solution.

It is the practice in some hospitals to inject into the rectum of each surgical case, before removing from the operating table, a pint of hot normal salt solution, which not only acts as a stimulant but prevents the excessive thirst following the anæsthetic.

The uninterrupted normal salt solution enema at 100° F. is used also for shock, for the depletion of fluid resulting from hemorrhage, in septic surgical patients such as appendicial abscess, and in acute nephritis.

These enemata are given with a large fountain syringe, the tubing clamped to allow only the slightest flow, which will usually be absorbed as fast as given with no discomfort to the patient. The smallest-sized vaginal douche point has been found better than the regular enema point, as the holes are very small and on the sides, and the pressure from the rectal walls helps control the flow. To keep up the temperature of the solution place the discharge tube of the fountain syringe between two rubber hot-water bottles.

Ice-water enemata may be ordered after hemorrhage from the bowels, as in cases of typhoid fever. Give slowly with low pressure, using a fountain syringe and small rectal tube. The amount to be given should be designated by the doctor and not determined by the nurse.

Emollient Enemata. — Emollient (soothing) enemata are ordered in dysentery, cholera morbus, the summer diarrhœa of children, or in any case where diarrhœa is

accompanied by tenesmus and the rectum has become much irritated.

To two ounces of thin cold boiled starch (either laundry or corn starch) a certain amount of opium is added. This should be given through a small tube with great gentleness.

Sedative Enemata.—Sedatives, such as the bromides, chloral, and opium, may be ordered by rectal injection given in two ounces of milk or water through a small tube, but drugs are more commonly administered by rectal suppositories.

Suppositories.—These suppositories are conical-shaped appliances made of cocoa butter as a vehicle and containing various drugs,—opium, morphia, and iodoform being most common. Glycerine suppositories are glycerine covered with a tough coating of gelatine, which like the cocoa butter melts with the heat of the body. Cocoa-butter suppositories if slightly warmed are more easily inserted.

Small soap suppositories are sometimes used for constipation in infants.

For pruritus (intense itching) of the anus and rectum a suppository of ice will sometimes give immediate relief. Dip the suppository in water that there may be no sharp cutting edges. There will be some pain from the ice for a very few seconds.

DOUCHES

Douching is a means of flushing external surfaces or cavities of the body, such as the vagina, ear, eye, and nose.

Douches may be of plain water or medicated, and may be hot or cold.

Vaginal Douches. — The use of the vaginal douche is common in gynecological (diseases peculiar to women) patients and somewhat with the obstetrical (lying-in). The purpose of the vaginal douche is twofold, *i.e.* for cleanliness, to allay inflammation or control hemorrhage.

Simple hot douches consist of from two to four quarts of water *as hot as can be borne*, 103°–115° F. Antiseptic douches of a great variety may be ordered, bichloride of mercury solution 1–3000, carbolic acid 1 per cent, boracic acid, salt, borax, creoline, lysol, etc.

A fountain syringe with glass douche point and a douche pan or Kelly pad are required.

The patient should lie flat upon her back; no vaginal douche given to a patient in the upright position is of the slightest value.

With a new patient, the nurse should know whether the woman has taken vaginal douches before allowing her to insert the douche point herself. Many women prefertaking douches themselves, and when able and with reasonable assurance that they understand what to do, they are often allowed to do so. The mistake which might be made is by inserting the point into the rectum, which in the case of strong antiseptics might prove fatal.

Method of Giving. — By beginning the douche at 105° F., hot water may be added until 115° F. or more is reached.

The fountain syringe should never hang higher than six inches above the patient's abdomen for two reasons: first, in inflammatory conditions the cervix is relaxed and often open, which might allow the entrance of water into the uterine cavity if too much pressure were used; and second, the slower the flow the longer the inflamed surfaces are bathed in hot water.

The entrance of water into the uterus is dangerous and the possibility should be always borne in mind and guarded against; the reason why vaginal douche points are made without an opening directly in the end is to prevent this very occurrence. Should a patient complain of sudden sharp pain in the abdomen, *stop the douche instantly.*

Air or fluid forced into the uterine cavity and thence into the fallopian tubes usually causes this pain; and might result disastrously; such a circumstance should be reported to the doctor without delay and also be recorded.

The water should be flowing freely before the douche point is inserted. It is a good practice to irrigate the external surfaces, separating the labia before introducing the douche point.

The point should be inserted carefully, following the rectal or posterior wall as far as it will go. Behind the cervix lies a small cul-de-sac (pouch) into which the douche point should go and from which the cervix will be thoroughly bathed in the hot fluid.

A vaginal douche given under too great pressure, with lukewarm water and the point one half or one third of the way in, is utterly useless and a waste of time in giving it.

Continuous Douche. — A continuous douche may be given by packing a strip of absorbent cotton with a dressing forcep around the douche point to retard the return flow, and by hanging the large fountain syringe about two inches higher than the vaginal orifice; a gallon of hot water will take at least three quarters of an hour in passing through. Wrap the fountain syringe in a large bath towel to retain the heat.

Intra-uterine Douches. — Intra-uterine douches are the

uterus). douches are sometimes given after difficult and complicated labor or in septic conditions, but this treatment should always be given by the doctor.

The intra-uterine douche point is glass, small in caliber, long, and curved. All articles used for an intra-uterine douche must be sterile and used under the strictest surgical cleanliness.

Care of Douche Points.—The jars or utensils for holding douche points, enema points, and catheters should be washed, scalded, and have fresh antiseptic solution *every day*. The points and catheters should be cleaned and put into a second jar in the bath room after using and *twice daily* the collection well scrubbed and boiled in soda 5 per cent and returned to the clean solution jar. In this way there will be no uncertainty about the cleanliness.

Douche points should be scrubbed and boiled after using and kept in carbolic acid solution 5 per cent or bichloride of mercury solution 1-3000. In cases of gonorrhea, catheters, douche points, fountain syringes, douche pans, and stop buckets must be especially marked and never used for other patients.

In such cases, also, the nurse should exercise the greatest precaution in guarding herself. A high-necked and long-sleeved apron should be worn from the beginning until all utensils have been disinfected; rubber gloves should be worn if the nurse has any abrasions, cuts, or scratches upon her hands; she should avoid using the handkerchief or touching the face, garments, or anything while working over such a patient, and finally, removing the apron and scrubbing and disinfecting the hands.

Douching the Eye.—It is a common complaint that many otherwise efficient nurses are awkward and careless about the eye, which should not be.

Of all our senses, most of us hold sight the dearest; consequently, the eye patient should receive our most skillful and conscientious care.

Douching, or irrigation, of the eye is a delicate bit of work requiring much deftness and gentleness. It consists of washing the inner surfaces of the lids, and the globe of the eye, and must be done with very little force.

The solutions ordered for the eye are most commonly warm boracic acid or normal salt. Stronger antiseptics may be used upon the eye, but not generally for irrigation.

Method of Giving. — A soft rubber syringe made especially for the purpose is commonly used, or better yet the small glass vessel shaped like a retort known as an undine.

If the patient is able to be up, he should sit in a straight chair, leaning back slightly while the nurse stands behind.

A towel is put around the neck and the patient directed to hold a pus basin under his cheek to catch the fluid.

With one hand the nurse should support and steady the head, turning it enough that the fluid will not run into the other eye, and with the first and second fingers separate the lids, slightly everting them and directing the patient to look down.

“The nozzle of the irrigator is directed toward the *space between the inner angle of the eye and the root of the nose*, causing the fluid to form a small pool which overflows into the eye from the inner angle. Should the stream be directed against the globe the patient will wince and close the eye.

“As the patient becomes accustomed to the fluid he will be able to look up and down, and the whole surface may thus be irrigated.” (Friedenberg.)

With small, unruly children two nurses will be needed,

one sitting with the child's head upon her knees with its feet under her left arm, and restraining its hands, while the other nurse attends to the irrigation.

With an infant, one nurse may easily manage by wrapping the child in its pinning blanket and steadying its head between her knees.

Both of these postures are used in making applications of various kinds to the eyes of children. The especial points in irrigating the eye are therefore gentleness, sureness about strength and temperature of solutions ordered, and protection of the other eye if only one is affected.

Nasal Douches. — Nasal douching was employed formerly much more than at present. In douching the nose the stream should be small and the force very slight, using a fountain syringe, the patient leaning forward with chin depressed to favor the return of the douching fluid through the mouth. Should the nasal douche be followed by pain in the ears it should not be repeated until the fact has been reported to the doctor.

Douching the ear is also less used than formerly. This also should be executed with the greatest care, the especial point being to have so small a stream with so little force that there will be abundant room for the return flow.

Place a pus basin under the ear to collect the return fluid, use a fountain syringe, draw the lobe of the ear upward and backward, and direct the nozzle upward. The syringe should not hang higher than three or four inches above the orifice.

CATHETERIZATION

Catheterization of the bladder is ordered either for the purpose of securing a specimen of the urine or because for some reason the patient is unable to void the urine or because of the presence of stitches or a wound in the perineum or vaginal walls. The enforced recumbent position very often prevents voluntary urination and were the patient able or allowed to sit up catheterization might be unnecessary.

A nurse should never catheterize without orders. Sometimes very simple means will induce urination, such as the sound of running water, hot drinks, putting the patient upon a bedpan and directing a stream of warm water over the vulva.

Incontinence of urine sometimes occurs from distended bladder, the constant flow being simply the overflow; in such cases the bladder may be felt hard and distended just above the arch of the pubes, and if external douching does not relieve it, the condition must be reported to the doctor.

Catheterizing a distended bladder must be very carefully done. The urine must not all be drawn at one time, but the catheter used twice or three times; in great distension, with an interval of half an hour. It is said that by the sudden collapse of the bladder walls after distension cystitis (inflammation of the bladder) results.

Catheterization of male patients should be done by orderlies or junior house doctors, but the care of the catheters and utensils should be given to the women nurses.

Nurses should, however, pay particular attention to the records of male patients regarding urinations, as

there is no doubt but this is apt to be overlooked more often with men than women.

Methods of Catheterizing. — Catheterization may be accomplished with glass, silver, or rubber catheters, glass being preferable for women.

The lining membrane of the urethra and bladder is peculiarly delicate, sensitive, and liable to infection, which compels that all catheters, utensils, sponges, and the nurse's hands as well as the external genitalia must be surgically clean, or infection and cystitis will surely follow.

With proper precautions catheterization may be carried on for days and weeks with no cystitis resulting unless cystitis from gonorrheal infection has been present or the urine contains some element causing an irritation; but in the large majority of cases of cystitis following catheterization it may be safe to say infection was caused by some flaw in the technique of procedure.

Cleaning Catheters. — All catheters should be cleaned by allowing cold and then hot water from the faucets to run through them, washing well in soapsuds, boiling in soda solution 2 per cent, and then putting into jars of antiseptic solution, either carbolic acid 2 per cent or bichloride of mercury 1-1000. Before using, the catheter should be put into a basin of sterile water or boracic acid solution. Cystitis (inflammation of the bladder) may result from using catheters directly from the carbolic acid or bichloride of mercury solutions. Put into the basin with the catheter six or seven sterile gauze sponges.

Place the patient upon her back with the knees bent and separated, and her heels well back, against the buttocks; put a douche or bedpan under her and see

that there is no more exposure than is absolutely necessary. A good light is necessary, a candle at night being generally used, although it must be put in a safe place on account of fire.

The easiest way of cleansing the external genitalia, especially where there are any stitches in the perineum or vaginal wall, is by using a fountain syringe; separate the labia with the left hand and direct the nozzle with the right hand. Before removing the left hand cover the meatus with a clean sponge; wash the hands, and introduce the catheter slowly, using the slightest force possible. When the end reaches the bladder, it may be felt moving freely, and ordinarily the urine flows at once. Should it cease before it would seem the bladder is empty, draw it out slightly and turn, when the urine may flow again; withdraw the catheter slowly, not allowing the urine remaining in the end to dribble upon the patient, her clothing, nor the bed; sponge the labia again.

If by accident the catheter should be slipped into the vagina instead of the urethra, it should be cleaned or another catheter used.

With male patients vaseline or olive oil should be provided for anointing the catheters. These emollients must be sterilized and a small quantity taken out for each catheterization; on no account should the supply jar or bottle be carried to the bedside and be dipped into with the fingers.

Vesical Douches. — For vesical (bladder) douching warm sterilized water or boracic acid solution is most commonly used.

A double catheter which is made like an inverted "y" is almost indispensable for bladder irrigation; the

stem of the "y" is divided, each division with an opening in the end. The stem is introduced into the bladder, and of the short arms one is used by attaching to the sterilized fountain syringe and the other for the discharge of the fluid from the bladder.

The douche should be continued until the water runs clear.

Without the double catheter, an ordinary glass catheter may be attached to a short piece of rubber tubing and after introducing the catheter into the bladder and emptying it, a small sterile glass funnel is attached to the rubber tubing and with a small pitcher the warm solution is poured slowly into the funnel. Four ounces of the solution is about all the patient will take without pain. The funnel should then be lowered and the solution allowed to escape. Repeat until the fluid runs clear, which is usually after the third time.

In cases of vesical fistula (artificial opening in the bladder; in women, usually discharging into the vagina) a self-retaining catheter is often used after operation.

This catheter, which is made of pure soft rubber, has a flange at one end shaped like the end of a small thread spool, which prevents it slipping out and the catheter keeps the bladder empty, thus avoiding the urine collecting or passing over the stitches in the fistula.

The catheter is introduced by inserting a small uterine sound into the eye, and by stretching out the flange in the soft rubber, it may be easily slipped into the bladder and the sound removed.

The catheter should be removed every twenty-four hours and a clean one immediately replace it, but a self-retaining catheter in fistula cases needs constant watching to see that the flow is steady, as mucus or

blood clots may obstruct the flow and in a short time the stitches be soaking in urine.

In the old days, before the use of the self-retaining catheter, a vesical fistula operation was often a repeated failure, while the most conscientious nurses were distracted with anxiety over their care.

Catheterization of the ureters is sometimes performed for diagnostic purposes, but is never done by a nurse.

CHAPTER X

LOCAL APPLICATIONS

THE application of heat or cold to a circumscribed area to relieve pain or allay inflammation is accomplished by many forms of fomentations, poultices, compresses, ice bags, and ice coils.

Hot Fomentations. — The hot fomentation is a simple easy form of applying moist heat for pain, such as tooth or ear ache, upon the abdomen in painful menstruation or other pelvic pain, for sprains, inflamed joints; and for surgical wounds or abscesses to hasten the process of suppuration.

The value of any application of heat or cold depends entirely upon the constancy of its application. To leave the hot application until it is cold, or *vice versa*, does more harm than good.

A fomentation, or stupe, is made of at least four layers of soft flannel large enough to generously cover the painful or inflamed part.

A wringer for fomentations may be made of a strong piece of ticking, 18 x 27 inches, or a new kitchen towel, making a three-inch hem at both ends and putting into the hems two pieces of a broomstick each 15 inches long. Lay the wringer, spread open, in the bottom of a basin; add the flannel, smoothly folded, and enough water near the boiling point to cover it; twist the wringer by the two sticks going in opposite directions; when dry enough, carry the fomentation in the wringer to

the bedside. Oil the surface, where the fomentation is to be applied, with either olive oil or vaseline; shake out the flannel to let the steam escape, and apply as hot as the patient can stand it, which will vary greatly with different patients or different places. An ankle or wrist will stand more heat than the chest or abdomen. Cover the fomentation with a piece of rubber cloth, — if single-faced, always turn the rubber side next to the moist flannel; cover with a large flannel or cotton pad, and fasten securely with safety pins. When applied to the abdomen, a wide binder should be used to keep the fomentation in place, or if a limb is fomented the cotton pad or flannel should be long enough to entirely surround the limb and fomentation. When possible, surround the fomentation with hot-water bags, which is usually feasible except upon the abdomen. Change the fomentation often enough to keep it hot. Two sets of flannel are always needed, and the first should not be touched until the second is ready to apply.

When any hot application is discontinued, the part should be bathed and then protected by a dry flannel for a day or two. Where such applications are carried on for some time, the flannels should be washed out once daily with warm soapsuds and spread out to dry, otherwise they become offensive. The skin also must be bathed daily, and pads or bandages removed when they become soiled.

If care is exercised about burning the patient and keeping all materials clean, fomentations may be kept up for many days without blisters or discomfort; but with a heedless nurse in twenty-four hours blisters appear, and the patient has a most unpleasant odor of soiled wet flannels and damp sheets. There is one

instance, however, where blisters nearly always appear, which are not due to the excessive heat of fomentations, and that is in cases of fracture or bad sprains. These injuries are accompanied by great swelling and may be followed by blisters when no fomentations have been used. When fomentations are continued after blisters have formed, the blisters should be pricked and drained, and the whole area covered with clean surgical gauze, frequently renewed, and the fomentation applied over the gauze.

Turpentine Stupes. — A turpentine stupe or fomentation is often ordered to be applied to the abdomen of typhoid patients. Special care must be given to avoid blistering. A mixture of one part sp. turpentine and seven parts of olive oil, well shaken, and applied to the surface every four hours, and the fomentations applied in the usual way, has been found the most satisfactory way of using the turpentine; the old way of adding a few drops to the hot water or flannel almost invariably produced blisters in spots.

The continued use of turpentine may produce painful urinations, decreased or interrupted flow of urine, or smoky dark urine, and as turpentine stupes are used mostly with typhoid patients who are too ill to realize their condition, the nurse must be very watchful of the urine, whenever turpentine stupes are used.

Poultices. — Poultices are another form of moist-heat application which require more time in preparation, but retain the heat longer than fomentations.

Linseed meal is the material most commonly used, as it is cheaper, less heavy, and retains the heat longer than bread, bran, cornmeal, or other vehicles. Into a kettle or pan of fast-boiling water, stir gradually enough

linseed (flaxseed) meal to make the proper consistency, stirring constantly. Add olive oil, $\frac{3}{4}$ j, and beat hard after it is thick enough. The hard beating incorporates the air and makes the poultice lighter, and it also retains the heat longer. It should cook long enough — usually about six minutes — to hold together and scrape easily from the sides of the pan. Properly made, a linseed poultice is light and has not an unpleasant odor; but if made with water below the fast-boiling point, it will be very heavy from too much meal and have a disagreeable odor. A poultice board is needed for spreading and carrying to the bedside. Old cotton or linen cloth, or cheesecloth, should be laid smoothly upon the board, and the poultice spread over one half of the cloth, leaving at least a two-inch margin to fold over around the edges; fold over the other half of the cloth and baste the edges together so there is no possibility of the poultice pressing out around the sides and soiling the gown or sheets. When the poultice is very large, it should be kept covered while the edges are sewed, but with a small poultice it may be so quickly done that the warm cover is not necessary except to carry it to the patient. Oil the skin before applying, as with the hot fomentation, and cover with rubber cloth and flannel as before described.

Poultices may be reheated and used a second time, *but not more*, by putting into a double boiler with a tight cover over a brisk fire for twenty or thirty minutes. The common practice of warming a poultice over and over in a steamer or colander, making it a wet slippery mass, unpleasant alike to sight, touch, or smell, should never be followed.

Enough poultices for twenty-four hours, probably

eight in number, may be made at one time, being heated in the double boiler one at a time, as needed, and thrown away after the second application.

A charcoal poultice for a foul discharging wound is made by adding one tablespoonful of powdered charcoal to each quart of linseed poultice and omitting the olive oil. *A charcoal poultice should never be used a second time.*

Bran or cornmeal may be used in the same way as linseed, but bran does not hold the heat so well, and cornmeal is heavier than linseed.

A bread-and-milk poultice is made by soaking bread in hot milk and beating together with a large fork until the proper consistency. There is no virtue in any of these vehicles except as they hold the moisture and heat.

A mustard poultice is made by adding at the last moment a tablespoonful of ground mustard to a quart of poultice, being careful that it is evenly mixed in the poultice. Mustard poultices are used upon the chest in colds or across the kidneys in suppression of urine.

An onion poultice is made by cutting onions in slices and simmering in a close-covered pan with a tablespoonful of lard for fifteen minutes. They are ordered but seldom in pneumonia, the principal objection being the offensive odor, which will soon pervade a whole hospital.

Cold Applications. — The application of cold is accomplished in various ways; the ice cap, ice coil, or small ice bag being the best means, as the clothing is thus kept dry.

The ice cap is a double rubber cap into which chopped ice is put through an opening in the top and the cap tied on with strings fastened under the chin. Care must be taken that the ice is in small pieces; or it will

be uncomfortable for the patient; sharp points or edges on the ice will easily cut the rubber and cause a leak. The sharp edges may be removed by letting warm water run over the ice for a few seconds. The cap should not be filled more than half full or it will be too heavy. If the patient is a woman with plenty of hair, the scalp will need no protection to avoid freezing, but with men patients, especially if they are inclined to baldness, one or more layers of gauze or old linen should first be put over the scalp. The skin must always be protected in applying any ice bag.

Ice bags are made in a dozen different sizes and shapes; very small, delicate bags for the eyes, long ones for the spine or legs, and larger ones for the abdomen or joints. The pig's bladder, before mentioned, is an excellent substitute for the small bags for the eye, which are made of thin pure rubber and are therefore perishable and expensive.

Ice compresses are frequently ordered, especially for the eyes, when moist cold is required and the ice bag is too heavy.

A basin containing a large piece of clean ice, covered with small cotton or linen compresses, may be put at the bedside, making it easy to change them not less often than every ten minutes. Such an order may be given to be applied once every five minutes for thirty or forty minutes, followed by an interval of an hour or two.

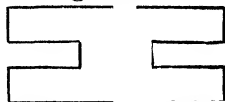
If the eyes are simply inflamed and there is no discharge, the compresses may be returned to the ice and used over several times; but if there is any discharge, the compresses should be rolled in a bit of paper and thrown away at once.

Large ice compresses for the head or for the abdomen in typhoid fever may be managed in the same way. In applying any ice compress care should be taken not to dribble water from wet hands or compress either upon the patient's skin or clothing.

The ice coil is made by coiling one-half inch rubber tubing upon a round piece of gauze or thin cotton cloth about ten inches in diameter, sewing it on as it is coiled by including the tube in the stitch, but never putting the needle through it. The tubing should be coiled from the middle of its length, leaving at least two yards of extra length at both ends. It may be pieced out by inserting a short piece of glass tubing, such as an enema point.

A pail, holding at least twelve quarts, is filled with water containing a large piece of ice, the pail being put upon the bedside table; one end of the coil is put into the pail, and to prevent any obstruction in the tube and also to give sufficient weight to hold the end down in the water, a small glass funnel is inserted in the tube, the funnel being covered with a piece of gauze.

The abdomen should be covered with gauze or old linen, and a gauze binder cut thus:



the small ends crossing the coil in front and holding it in place. A drainage pan is placed upon the floor to receive the water. The water may be started through the coil in two ways: either by siphoning with a hard rubber syringe, or by filling it from the upper end with an enema pail.

The flow of water need not be rapid, but just enough

to keep it cold, and may be controlled by tying a string around the tube as tight as will regulate it.

An ice coil needs constant watching to keep the flow steady.

The special difficulty of controlling the flow lies at the point where the rubber tube bends over the rim of the pail, unless it is obviated by the hard rubber or tin half tube made like a broad inverted U, which serves as a carrier and prevents the coil from doubling and shutting off the water.

The whole apparatus of coil, pail, and drainage pan may be bought ready for use, but is not enough better to compensate for the extra cost.

Counter-irritants. — Counter-irritants are agents intended to produce superficial irritation to relieve other irritation, such as the application of a mustard plaster to the chest in the case of a cold, or painting a part with iodine for a sprain.

Mustard leaves or mustard plasters are the most common form of producing counter-irritation.

Mustard leaves may be bought ready made for immediate use. They are usually four by six inches in size, made upon muslin, and need only to be dipped in warm, not hot, water and applied with a soft piece of old linen covering the skin; the latter point should never be omitted, as the application of mustard directly to the skin is very painful and speedily produces small blisters. An old linen handkerchief is the best covering for the skin. A mustard plaster is made by mixing in the proportion of one tablespoonful of mustard to two tablespoonsful of flour and the white of an egg with enough warm water to make a rather thick paste. Spread the plaster upon a soft clean cloth large enough to fold, and cover both

sides, with a good margin on all sides; baste the edges and apply until the skin is well reddened.

Painting with Tr. Iodine. — Painting the skin with iodine is a form of mild counter-irritant commonly ordered to be applied daily upon a certain area for a stated length of time.

The strength of iodine, like all tinctures, is variable according to the time it has been made, as the alcohol rapidly evaporates, and if the iodine has been standing several weeks, the strength becomes greatly increased, causing severe burning pain and blistering; consequently, the first application should be very lightly made until it is seen how much irritation is produced.

To paint with iodine, make an applicator of a piece of pasteboard or thin wood one and one half inches wide and three inches long, covering one end with absorbent cotton, put the required amount of iodine into a small cup or jar provided for that purpose, never by any possibility putting an applicator into the bottle, and paint the area in even strokes, all going in one direction, and not overlapping; on the second day paint with strokes at right angles to the first and the third day in a diagonal direction. By this method of application the daily painting may be continued indefinitely and no blisters appear, which are caused by using too much iodine upon one spot.


This point is especially important when iodine is applied to a joint, such as the knee, ankle, or wrist.

Blisters. — Blisters are commonly produced by the application of cantharides plaster or cantharidal colloidion, which may be bought ready for use.

Nurses should be extremely careful about confusing cantharides and belladonna plasters, both of which

are black. Each has a characteristic odor, which may be detected by practice, and the cantharides plaster usually has or should have printed upon the back, "Oil the surface before using."

A belladonna plaster is only slightly irritant and may be left on indefinitely with no harm, while a cantharides plaster produces a deep blister, which will, if left on too long, destroy the tissues, leaving an open, ulcerating surface, very painful, and if of any size, may be months in healing; hence the great caution necessary to avoid confusion of the two plasters. The size of blisters should always be designated in the order. Should the size be omitted, however, the nurse should never exceed a 1 x 1 inch size for a cantharides plaster.

The part to be blistered should always be thoroughly washed in hot, soapy water, rinsed with clear water, and rubbed well with alcohol. The cantharides plaster is then oiled with vaseline or olive oil and the square applied so that one of its corners shall be its lowest point, thus: . The plaster should remain upon the

skin until a large single bleb or blister has been produced, which may take from two to six hours, depending upon the location or upon the patient. Blisters are produced more quickly upon children, whose skin is soft, than upon adults, and more quickly on women than men, probably for the same reason.

If a bleb does not appear at the end of five or six hours, the application of a small hot fomentation over the blister will often produce the desired result in a very few minutes.

Before removing the blister the nurse should scrub and disinfect her hands and have ready to use in a clean

surgical basin a small pair of sharp-pointed, sterilized scissors or a scalpel together with half a dozen sterile gauze sponges, a small pad of absorbent cotton and bandage, and another basin with warm boracic acid solution and a small quantity of sterile vaseline.

Remove the blister by loosening the upper corner and pulling it off slowly and very gently to avoid breaking the skin. Then with the scissors or scalpel cut a very small incision in the lowest corner and with a small piece of cotton begin at the upper corner and gently pat the skin back into its place down to the small cut, thus draining out all of the fluid.

The blister will be dressed as ordered. Sometimes a pad of absorbent cotton wet with boracic acid solution is employed or vaseline with or without powdered boracic acid may be ordered; but whatever the order for dressing the blister, especial care must be taken in applying the bandage which holds it in place, for it must be applied firmly enough to prevent any rubbing, otherwise the skin will not adhere to its original site and a long, tedious, open wound results.

Cantharidal collodion is less frequently ordered and should be applied with a camel's hair brush, great care being taken to prevent its spreading over too great an area. When the bleb appears, the collodion may be removed by wetting the surface with chloroform or ether and opening the blister and dressing it as above described for cantharides plaster.

Blisters applied to any area where a bone lies near the surface, such as at the knee, ankle, wrist or spine, should be watched with extraordinary care; such blisters left on too long may destroy the tissues, leaving the bone exposed and resulting in a sloughing wound. extremely

slow in healing and causing the still greater affliction of possible loss of motion in the joint.

Large cantharidal blisters may produce suppression of urine or painful urinations. If either symptom appears in the slightest degree, they should be reported to the doctor without a moment's delay.

The time of applying and removing a blister should always be recorded.

Croton oil, chloroform, and aqua ammonia may be ordered for blistering; all produce small vesicles instead of the large single bleb. Croton oil and aqua ammonia may be applied with an applicator as with iodine, but chloroform is best applied by using a sheet of writing paper of the required size, which should have a number of small perforations. Dip the paper into the chloroform, apply to the skin, and hold in place with a firm bandage. The chloroform may have to be applied a second time.

Cupping. — Cupping is another method of producing counter-irritation, which is now seldom used. It is produced by applying cups to the skin after a vacuum has been created, which causes a speedy dilatation of the capillaries with reddening of the skin.

Glass cups in sets of five or six are provided for cupping, but any small glass tumbler or wine glass will answer the purpose quite as well.

Make a small swab of a fork handle or stick and absorbent cotton, dip the swab in alcohol, and swab the bottom and two thirds of the sides of the glass, being very careful that no alcohol touches the other one third or the edge of the glass. Invert the glass over the flame of a spirit lamp and while still burning, apply to the skin, making sufficient pressure to exclude all air and maintain

the vacuum, leaving the cups on until the skin is well reddened. Remove the cup by making pressure upon the skin at the edge of the cup to let in the air, and never pull at the cup until this has been done.

There is no danger of burning the patient unless too much alcohol has been used; there should never be enough alcohol to run down the sides of the glass when it is inverted. Another method of cupping is done by cutting a circle one and one half inches in diameter of blotting paper or thin pasteboard. Take an inch-long piece of candle and warm its lower end until it will adhere to the center of the pasteboard circle. Light the candle and stand the circle upon the desired spot, covering it very slowly with the glass and making enough pressure to exclude the air. The candle will burn until a vacuum is created.

Wet cupping is so called because several slight incisions are made in the skin, and by the application of cups bleeding is produced. Wet cupping is ordered for the temple in cases of inflamed eyes, but is usually done by the doctor, not the nurse.

Before wet cupping is done, the skin should be washed with hot soapy water followed by boracic acid solution and the cups applied as in dry cupping. Never make the mistake of using alcohol for disinfecting the skin before wet cupping is done or a bad burn will result when the cup is applied.

Cauterization. — Cauterizing the skin to produce counter-irritation and the cauterization of certain surgical wounds is accomplished by means of the Paquelin cautery, an instrument made with platinum points of varying sizes and shapes, which are brought to a white heat and used to sear the surface. The cautery, however,

is never used by the nurse but always by the doctor, the nurse's part in the treatment being to get the cautery in readiness and to prepare the site for cauterization, as would be done in case of a cantharidal blister by scrubbing the skin with hot soapy water, rinsing with clear water, followed by boracic acid or carbolic acid solution 3 per cent. Again it seems necessary to warn the nurse against the use of alcohol prior to cauterizing. Nurses should be ever mindful of the dangerous inflammability of alcohol, benzine, and ether when cupping, cauterizing, or the surgical preparation of patients is going on, particularly at night where gas, lamps, or candles are used.

The mechanism and care of the Paquelin cautery should be thoroughly learned by the nurse in the operating room, it being a complicated, delicate instrument of uncertain behavior, which requires the most careful and intelligent handling.

CHAPTER XI

GASTRIC LAVAGE, GAVAGE, NASAL FEEDING

Gastric Lavage. — Gastric lavage or stomach washing is a form of treatment commonly ordered in the emergency of poisoning, and sometimes employed in acute indigestion and in some forms of chronic dyspepsia.

In cases of poisoning when the patient is unconscious gastric lavage should always be given by the doctor. The lavage is accomplished by means of a stomach tube which is made of soft rubber about one yard long, one half inch in caliber, and provided with a bulb enlargement for starting the return flow.

The stomach tube is also used for gavage or forced feeding and for the removal of the stomach contents. In poison cases and where the treatment is being given for the first few times, the mouth gag should be used, for no matter how ready the patient may be to assist he will involuntarily close his mouth when the tube reaches the base of the tongue.

If able, it is much better for the patient to sit in a straight chair with a large rubber cloth fastened around the neck to protect the clothing.

The nurse's hands should be washed before beginning to handle the stomach tube, which should be wet in clean warm water. The use of vaseline or olive oil to anoint the tube is extremely distasteful to many patients, and except in emergencies where speed is necessary the simple wetting of the tube is sufficient.

With the forefinger of the left hand depress the base

of the tongue, making forward pressure, at the same time passing the tube over this finger with the right hand. When the tube is once in the oesophagus, the tendency to gag and vomit usually passes off.

Insert the tube until the dark ring reaches the lips. Fasten a small glass funnel to the outer end of the tube unless it is provided with the flaring, funnel-shaped end, and pour slowly into it one or one and a half pints of warm water; lower the end of the tube over a drainage pan or pail and make pressure on the bulb once or twice to start the return flow; repeat until the water runs clear, which is usually the third time. Should the water contain any blood, do not repeat but report to the doctor at once, as in case of gastric ulcer, injury and possible hemorrhage might result. In emergency cases the stomach may contain undigested food which might clog the tube and necessitate repeated pressure upon the bulb to keep a constant flow.

In such cases when the patient is wholly or partly unconscious, there is great danger of the tube being forcibly ejected together with the undigested food, some of which may lodge in the trachea, causing choking. Except under the circumstance of extreme necessity a nurse should not be left alone with such a patient.

In some chronic forms of dyspepsia where gastric lavage is ordered the return flow may bring up quantities of sour mucus, which also clogs the tube. If pressure upon the bulb fails to dislodge the mucus and clear the tube, it may be pulled out six or eight inches and then returned, and if this fails, the tube must be removed altogether and cleared of the mucus.

Cocainizing the Pharynx.—In some special cases the order for spraying the pharynx with cocaine 1 per

cent may be given, the procedure being to make pressure once or twice upon the bulb of a small throat atomizer containing a 1 per cent solution of cocaine. After an interval of one minute this is repeated, which is done seven times with the one-minute interval between each spraying, when the stomach tube may be inserted with perfect ease.

Gavage. — Gavage or forced feeding through the stomach tube is frequently ordered for the insane.

In such cases the hands should be restrained and the mouth gag watched carefully.

The feeding is usually ordered for every six or eight hours and consists of concentrated food such as milk, eggs, and the beef extracts, any medicines ordered being added to the food.

For diagnostic purposes the order is sometimes given to wash out the stomach and give the patient a test meal, often consisting of toast and tea, which is removed by the doctor after a certain time to ascertain the exact condition of the digestion.

Gavage for premature infants is frequently ordered. In such cases a No. 8 or No. 10 rubber catheter is used, to which is attached a small glass funnel. The food, which may be mother's milk secured by a breast pump or food prepared by a specially ordered formula, should be sterilized together with the funnel and catheter.

The tube is filled with milk, clamped with the fingers, and passed into the throat and stomach about four inches, the remaining food being poured *very slowly* into the funnel. The tube should be quickly withdrawn and the baby allowed to remain quiet for a few minutes, the nurse watching for regurgitation (return of food), which might strangle it.

The special points in gavage for infants are exact quantities, perfect sterilization, and to avoid giving the food too fast.

Care of Stomach Tubes. — Stomach tubes require the best of care, else they speedily become offensive. The practice of putting stomach tubes into the same utensils as catheters or douche points is disgusting enough to condemn the practice without further words. The tubes should be rinsed first with cold water running through them with force, followed by hot water; they should then be put into a pan of clean hot soapy water containing a little soda and with the bulb the soapsuds pumped through several times. The soda cuts any oily accumulation in the inside; they should then be rinsed inside and out with clean hot water and hung up to drip and dry, after which they should be put away rolled in a clean dish towel. In short, stomach tubes should have exactly the same care as would be given spoons or cups and saucers.

Gastric Lavage a Trying Ordeal for the Patient. — The use of the stomach tube for any purpose is one of the most trying ordeals for the patient and requires much time and patience upon the nurse's part.

The tendency of some nurses to make light of such experiences is to be strongly condemned. Gastric lavage, catheterizing, vaginal and vesical douches, enemata, and many phases of surgical preparation are alike unpleasant to most patients, and if a nurse shows that she understands and sympathizes with the patient's natural reluctance, she can almost invariably persuade them that the sooner the disagreeable trial is over the easier it will be for all concerned.

Nasal Feeding. — Nasal feeding is sometimes ordered

for the insane or unconscious patient, and less frequently in such cases as have difficulty in swallowing. In many insane and general hospitals nasal feeding by nurses is very properly forbidden, as the danger with insane or unconscious patients is in the entrance of the tube into the trachea. Should fluid be administered while the tube is in the trachea, the patient would literally drown.

A large rubber catheter or small stomach tube (No. 16) is oiled and passed along the floor of the nose until it reaches the stomach, usually about twelve inches.

To make sure the catheter has not entered the trachea put the outer end of the catheter into a glass of water, and should any bubbles of air appear, remove the catheter at once, as it is in the trachea, not the stomach.

After the nurse is perfectly sure the catheter is in the stomach a small glass funnel is attached to its outer end and a pint of milk or milk and eggs or whatever food is ordered is poured very slowly into the funnel, withdrawing the tube quickly when all has been taken.

The order for nasal feeding is usually for every eight hours, giving one pint and adding whatever medicines have been ordered.

CHAPTER XII

DISINFECTION AND FORMULÆ FOR ANTISEPTIC SOLUTIONS

Preparatory Lesson upon Bacteria.

REFERENCES: *The Story of Germ Life*, by H. W. Cohn; *Dust and its Dangers*, by Dr. T. Mitchell Prudden; *Hygiene of Transmissible Diseases*, Section III, by Dr. A. C. Abbott.

Contagion. — In the transmissible diseases substances are thrown off which carry disease germs, and under favorable conditions these germs will be reproduced, such as the sputum in pulmonary tuberculosis, the discharges from the mouth, nose, and throat in diphtheria, the evacuations from the bowels in typhoid fever, the peeling skin (desquamation) in scarlet fever and other eruptive diseases, and the discharges from suppurating wounds.

The transmissible diseases are often properly called the "dirt diseases," meaning that they originate and are spread by a lack of cleanliness.

Knowing that pathogenic (disease) germs may be present in all the excreta of the body, and that heat, moisture, and darkness are all favorable to their development, it remains for the nurse to combat in every way the conditions which favor their reproduction. Perfect cleanliness of person, bedding, utensils, floors, and walls, with good ventilation and sunlight, must be the foundation for this prevention, for without them the complete destruction of the bacteria, which is called disinfection, cannot take place.

Transfer of Disease Germs. — The transfer of the

disease germ may be direct, from the patient to another individual; or indirect, through air (aërial), water, food, or insects. Infectious diseases are broadly divided between such as are air-borne and those conveyed by water, food, or insects.

Air-borne Germs. — To the first class belong the eruptive diseases, such as measles, scarlet fever, smallpox, erysipelas, chicken pox, also diphtheria, tuberculosis, and mumps. Besides the danger from the discharges and secretions being deposited upon bedding, floors, or utensils, and becoming a direct menace to others, there is the double danger of such discharges becoming dried and blown with dust to greater or less distances, and the still greater danger of the so-called "droplet" infection. It has been demonstrated that in talking, coughing, sneezing, and even in rapid breathing numerous germ-laden bubbles or droplets of mucus or saliva pass into the air, where they may float about for some time. In the case of pulmonary tuberculosis the greater danger would then be from patients still able to walk about, rather than with the bedridden.

Air-borne infection is, therefore, most dangerous in close, badly ventilated rooms or wards.

Water and Soil. — Infections borne by water are typhoid fever, cholera, and dysentery. The soil also may bear the bacilli of tetanus (lockjaw), cholera, and typhoid fever.

Food. — Infections borne by food, such as milk, meat, oysters, and fruit, are tuberculosis, typhoid fever, cholera, and the summer diarrhœa of children.

Insects. — Infections borne by insects are malaria, yellow fever, and typhoid fever; mosquitoes, house-flies, and bedbugs being the common carriers.

Inoculation. — Infections by inoculation are leprosy, syphilis, vaccina, ophthalmia, gonorrhœa, tetanus, anthrax, puerperal fever, tuberculosis, hydrophobia, pyæmia, and septicæmia.

DISINFECTANTS

Measures employed for the destruction of bacteria and other infective agents outside the body are known as disinfectants.

A disinfectant or germicide, therefore, is an agent capable of destroying bacteria and other infective material.

An antiseptic is an agent which is antagonistic to the growth of bacteria, but does not of necessity kill them.

A deodorizer may be either an antiseptic or disinfectant, or neither, but simply a substance which destroys or disguises an odor.

The disinfectants in common use are of two classes — heat or chemicals.

Heat. — Heat may be employed as a disinfectant in different ways: as dry heat at 300° F. for one or two hours; as steam, or boiling water. Fire is also a most effectual disinfectant, but is applicable to a very limited degree for the destruction of valueless articles. Sunlight is an efficient disinfectant which is constantly acting and no doubt removes most of the infective agents upon surfaces exposed to its rays. Many species of bacteria fail to grow in sunlight, while sunlight is injurious to all. Dry heat or baking is rarely employed in hospital work, but may be used effectively in the household when there are no other means at hand.

Boiling water destroys all bacteria and their spores in five minutes. The addition of 1 or 2 per cent of soda

increases its disinfecting power. Such a solution is usually employed for the disinfection of surgical instruments, and for clothing, dishes, and other utensils is especially valuable.

Steaming, or as it is commonly called "sterilizing," by live steam under pressure, is the most satisfactory disinfecting process known at present. Steam sterilizers, both large and small, are now a part of every hospital equipment: the large apparatus being used for mattresses, blankets, pillows, and clothing which cannot be sent to the laundry, and the smaller for the complete sterilization of all surgical instruments, utensils, and dressings.

The time-honored process of doing the domestic laundry work is really an almost complete sterilization for which little credit is given to our ancestresses who devised it. The clothing is usually soaked in cold water, washed in hot soapsuds, boiled for fifteen minutes, rinsed in clear water, dried in the sun, and ironed with a hot iron, which makes a cycle not to be despised by a scientist.

Chemical Disinfectants. — The principal chemical disinfectants are formaldehyde gas and solution, bichloride of mercury solution, carbolic acid solution, chloride of lime, copper sulphate, boracic acid solution, soda solution, sulphur dioxide, crenosol, lysol, creolin, salt solution, iodine solution, permanganate of potassium solution, and lime wash, commonly known as whitewash. To these may be added any number of commercial preparations, — many valuable and others worthless, — the choice of which is entirely out of the nurse's hands.*

For convenience the following formulæ for antiseptic solutions are given, which were prepared by Miss Jessie Breeze of the Illinois Training School for Nurses, and

submitted to Dr. Walter Haines, Professor of Chemistry in Rush Medical College, Chicago:—

N.B. All solutions kept constantly on hand should be changed three times a week.

Bichloride of Mercury (corrosive sublimate; mercuric chloride).

Bichloride of Mercury Solution (1-500)

Bichloride of mercury, 3 ij (by weight).

Common salt (sodium chloride), 3x.

Cold sterile water, 1 gallon.

Dissolve the salt and corrosive sublimate in about half a pint of water; filter this into sufficient water to make the gallon. Bichloride of mercury is very heavy and requires thorough mixing. This solution may also be made without salt.

Metric formula: Bichloride of mercury, 8 grams; cold sterile water, 4 liters.

Solutions of compounds of mercury must never be used on steel instruments or other metallic substances. To make 1-1000 solution, take 1 part 1-500 solution and 1 part water.

To make 1-2000 solution, take 1 part 1-500 solution and 3 parts water.

To make 1-5000 solution, take 1 part 1-500 solution and 9 parts water.

Carbolic Acid (phenic acid; phenol; phenyl alcohol). An inflammable crystalline substance which partially melts on exposure to moist air.

*

95 per cent Carbolic Acid

To f 3 iij of hot water, add enough melted crystals to make f 5 viij. Mix thoroughly until clear, and filter if necessary.

Metric formula: Hot water, 10 c.c., enough melted crystals to make 200 c.c.

5 per cent Carbolic Acid Solution (1-20)

Cold sterile water, 1 gallon.

95 per cent carbolic acid, f 3 vij.

Shake thoroughly and frequently until all globules are dissolved.

Metric formula: Cold sterile water, 4 liters; carbolic acid 95 per cent, 210 c.c.

To make 2½ per cent take 1 part 5 per cent and 1 part water.

To make 2 per cent take 2 parts 5 per cent and 3 parts water.

To make 1 per cent take 1 part 5 per cent and 4 parts water.

4 per cent Carbolic Acid Solution

Cold sterile water, 1 gallon.

95 per cent carbolic acid, f 3 v.

This solution is often erroneously called, and used as, a 5 per cent solution. For all practical purposes it is, however, preferable to 5 per cent.

To make 2 per cent take 1 part 4 per cent and 1 part water.

To make 1 per cent take 1 part 4 per cent and 3 parts water.

Boric Acid (boracic acid). A saturated solution (Sat. Sol. or S.S.) contains about 4 per cent boric acid. It is best made by putting an excess of the crystals on a filter and pouring the quantity of boiling or very hot water over them slowly until dissolved. Boric acid crystals are very light, the measured quantity being far short of the required quantity by weight. Hot water dissolves

more than cold, the excess being precipitated as crystals when the solution cools.

Stock Salt Solution is kept for the purpose of making normal salt solution quickly and accurately.

Sodium chloride, \mathfrak{z} iss (by weight); water, f \mathfrak{z} viij.

Boil in a closed vessel fifteen minutes. When cold, make up with sterile water to f \mathfrak{z} viij. Strain through sterile cotton into a sterile bottle and keep tightly corked.

Metric formula: Salt, 60 grams; water, 200 c.c.

Normal Salt Solution should contain 90 grains salt in 1 quart.

Metric formula: 6 grams to 1 liter.

Take \mathfrak{z} i of stock salt solution to make 1 quart normal salt solution.

Take 20 c.c. metric stock solution to make 1 liter normal salt solution.

The stock solution should be added to the necessary amount of sterile water of the required temperature, and mixed well.

Formaldehyde is a gas. Commercially it comes to us in solution, formalin, containing about 40 per cent of the gas. It also comes as a solid, known as paraform or paraformaldehyde, used only for fumigation with a specially designed lamp.

1 per cent Formaldehyde Solution (1-100)

Formalin, f 3 vjss.

Cold sterile water to 1 quart.

Metric formula: Formalin, 25 c.c.; cold sterile water to 1 liter.

1 per cent Formalin Solution

Formalin, f 3 ijss.

Cold sterile water to 1 quart.

Metric formula: Formalin, 10 c.c.; cold sterile water to 1 liter.

1-1000 Formaldehyde Solution

Formalin, m xxxviiij.

Cold sterile water to 1 quart.

Metric formula: Formalin, 2.5 c.c.; cold sterile water to 1 liter.

1-1000 Formalin Solution

Formalin, m \times v.

Cold sterile water to 1 quart.

Metric formula: Formalin, 1 c.c.; cold sterile water to 1 liter.

These solutions must always be prepared with cold water, because the gas is given off when heated.

Crenosol. — A thick, dark brown preparation from coal tar; turns bluish white on the addition of water. It can be used full strength, but must be applied after the preliminary scrubbing with soap and water, and when the skin is perfectly dry. Rub in well; leave on for one and one half to two minutes; then wash off with cold sterile water. There is danger of burning if left on too long, or if not thoroughly washed off. For hand solutions, douches, etc., 1 per cent and 2 per cent solutions (1-100 and 1-50) are used.

2 per cent Crenosol Solution

Crenosol, f 3 v.

Sterile water to 1 quart.

Metric formula: Crenosol 20 c.c.; sterile water to 1 liter.

Lysol. — A reddish-brown preparation from coal tar, used for douches and hand solutions in strengths of 1 per cent and 2 per cent.

2 per cent Lysol Solution

Lysol, f 3 v.

Sterile water to 1 quart.

Metric formula: Lysol, 20 c.c.; sterile water to 1 liter.

Creolin (Kreosol). A dark brown oily product of coal tar which makes a dirty milky solution with water. It is used in strengths varying from $\frac{1}{2}$ per cent to 2 per cent.

1 per cent Creolin Solution

Creolin, f 3 ijss.

Sterile water to 1 quart.

Metric formula: Creolin, 10 c.c.; sterile water to 1 liter.

It should be freshly made.

Potassium Permanganate is used in a solution of royal blue or purple color. It should be freshly made. Fold in a piece of sterile gauze a few crystals and suspend in sterile water of the desired quantity and temperature until the right color is obtained.

Iodine Solution is made by adding to sterile water of the required temperature sufficient tincture of iodine to make the color of sherry wine.

ISOLATION

In the nursing of contagious and infectious diseases, there are two special points to be considered besides the actual care of the patient, viz. isolation and disinfection, both being for the protection of others. It is not enough that the patient be isolated in another room or building, but that every avenue, direct or indirect, by which infection may be carried to others be guarded with intelligence and fidelity.

Consistent Technique.—A thoroughly consistent technique for each disease must be established. For instance, the precautions in diphtheria would in many points differ from typhoid fever; hence, the necessity for the nurse to understand the source of infection in each case.

There are, however, certain definite rules for observation which cover all isolated cases. First, there must be nurses who come in contact only with the isolated cases; the prompt disinfection of all infected materials before leaving the sick room, which includes bed and body linen; the provision for separate utensils of all kinds; careful, frequent, and regular cleaning of the room, including especial attention to the ventilation; frequent bathing of the nurse, with special care and disinfection of the hands. The room should be shorn of all but the barest necessities in the way of furniture, with good ventilation, and advantage taken of every ray of sunlight which may enter it.

In some of the eruptive diseases the eyes must be shielded from strong light, which may be done without shutting the sunlight out of the room.

The room should be provided with a gas stove, with a small steam sterilizer or boiler, with another boiler for boiling eating utensils.

Thermometers, tongue compressors, and any other instruments should be kept in 3 per cent carbolic acid solution, rinsed in warm water before using, and thoroughly cleaned after using.

Clothing.—Clothing soiled with evacuations or excretions of any kind should be put at once into a 3 per cent carbolic acid solution. All other clothing should be tightly rolled and put into bags wet with some disinfectant.

All cloths used for handkerchiefs, mouth and eye sponges may be put into small paper bags with a quantity of dry chloride of lime, tightly rolled, and kept in a close-covered receptacle until taken away to be burned. If care is taken, the daily accumulation of such articles may be kept dry and removed in a large bag wet with some disinfectant with no danger to any one concerned. Should the room contain a fireplace, then all the waste or garbage possible should be burned at once.

Nurse's Clothing. — The nurse should wear a high-necked and long-sleeved apron large enough to completely cover her uniform, canvas tennis shoes, or large slippers over her leather shoes, both of which should be left just inside the door when leaving the sick room. The aprons should be changed frequently, the tennis shoes or slippers daily dipped in some disinfecting solution, and a cap to completely cover the hair should be worn, and changed daily.

A daily bath, with a tri-weekly disinfecting bath of 1-5000 bichloride of mercury solution, is necessary for the nurse, the hair being washed frequently, and disinfected when leaving the room.

Evacuations. — The stools and urine of all patients suffering from infective intestinal disorders, such as typhoid fever, cholera, dysentery, or intestinal tuberculosis, should be disinfected as soon as passed. Bedpans and urinals should be kept partly filled with a 5 per cent carbolic acid solution, adding more if necessary after using, and allowing them to stand for an hour before emptying into the closet. After emptying, rinse thoroughly with cold water, wash with hot 5 per cent soda solution, and again partly fill with the carbolic acid.

Sputum from tuberculosis, influenza, and pneumonia patients should be received in covered vessels containing a 5 per cent carbolic acid solution, or it may be received in cheap pasteboard receptacles containing a small quantity of chloride of lime, the whole of which may be burned. Metal sputum cups should be boiled in soda water twice daily.

The discharges from the nose and mouth in diphtheria should be received in bits of old linen or cotton gauze, which should be provided liberally, being taken away at once after using and rolled tightly in a small paper bag containing chloride of lime.

In cases of adults who are able to handle their own handkerchiefs and sputum cups, the nurse must constantly be on the alert to keep the patient's hands and finger nails clean and to prevent them from putting soiled handkerchiefs under the pillow. A towel or napkin pinned like a bib across the front of the nightgown in such cases often saves frequent changing of the garment.

Disinfection of Patient and Nurse. — When the patient is able to leave the isolation room, a tub bath, followed by a disinfecting bath of 1-5000 bichloride of mercury, washing and disinfecting of the hair should be given, paying particular attention to the finger and toe nails. The patient, wrapped in sterile sheets, may then go into the adjoining room, and should put on entirely clean clothing, which should never go into the infected room.

The nurse, before leaving the room, should get it all ready for fumigation, and then take her own bath as prescribed for the patient. After dressing, she may enter long enough to start the fumigation.

Room Disinfection. — Room disinfection in the air-

borne diseases naturally is the most difficult, but the difficulty is greatly minimized if the room or ward has been shut off from direct currents of air to and from other parts of the building, if ventilation has been carefully maintained, perfect cleanliness preserved, and all shaking of clothing or "dry" dusting and sweeping avoided. Dry dusting or sweeping should never be done in any hospital room or ward. A cloth made damp, not wet, with 1 per cent carbolic acid solution should be used for wiping furniture, and sawdust, paper, or some other substance, also dampened with carbolic acid solution, be used for sweeping the floors.

In contagious wards the carbolic acid is a necessity, but a hot 5 per cent soda solution may be used for wetting the dusters in other rooms and wards.

For sweeping down walls woolen brushes are especially made. The wool fiber catches and holds the dust, and the brushes may be washed after using. In lieu of the regular woolen brush the broom may be covered with a piece of soft old woolen blanket.

The maintenance of sufficient dry heat to kill all bacteria in the room would mean scorching many articles with the additional danger of conflagration, while moist heat in the form of steam would also be destructive to furniture and walls; consequently, gaseous disinfectants, such as sulphur dioxide or formaldehyde gas, are most commonly used for aërial disinfection.

The sulphur disinfection has one special advantage in its cheapness, but it has not been found as efficacious as formaldehyde; it tarnishes all metals but iron, and discolours all colored fabrics.

In preparing a room for disinfection all bureau drawers,

cupboards, trunks, boxes, and closets should be opened, all garments spread over clothes-lines or chairs; in fact everything in the room arranged with the idea of exposing its greatest surface to the disinfecting gas. All crevices about windows and doors must be sealed; large crevices may be packed with cotton or old soft cloth cut in strips, and then covered with strips of adhesive plaster; the fireplace stuffed with paper, and a large paper pasted over the opening. Every crack and crevice, except the door of exit, must be packed before the sulphur or formaldehyde gas is started. For the door of exit strips of adhesive plaster should be in readiness to apply instantly when the door is closed. These strips should be torn off the required width, and then wound upon a stick like a spool, when they may be used very quickly without any doubling or tangling, which make long strips of adhesive plaster hard to manage. These adhesive strips may be used several times, so are less expensive than would at first appear.

Glycerine or green soap is sometimes advised for pasting strips of paper over these cracks, but glycerine does not always adhere, and green soap destroys the varnish or polish of the woodwork, while ordinary paste needs to be scraped off with a knife, which destroys the finish of the wood, besides taking a great deal of time to remove it.

Sulphur Fumigation. — For sulphur fumigation, five pounds of powdered sulphur for every 1000 cubic feet should be allowed. For computing the space contained in a room multiply the length by the breadth and that by the height: thus, 18 feet by 16 feet by 9 feet equals 2592 cubic feet, requiring, approximately, thirteen pounds

of sulphur. For the sulphur fumigation a large iron pot, — one with feet rather than a flat bottom being preferable, — a large dish-pan, or tin tub, and three bricks are needed.

Arrange the bricks upon the floor under the dish-pan or tub, being careful that it stands evenly and securely. Pour one or two gallons of boiling water into the dish-pan, and set the pot containing the sulphur, and half an ounce of pure alcohol, into the pan of boiling water. Light the alcohol and sulphur with a match, leaving the room at once, and putting the strips of adhesive plaster over the door of exit without delay. Lock the door and pack the keyhole, leaving the room closed for twenty-four hours.

By setting the pot of sulphur into the pan of hot water, steam is generated, thereby giving the moisture needed for disinfection, dry sulphur fumes not being effectual.

At the end of twenty-four hours, the room may be opened to the air and sun for another twenty-four hours. Upon entering the room the floor should be sprinkled with bichloride of mercury solution 1-1000, and swept with extreme care to avoid raising any dust; then all bedding and clothing for the laundry should be tied in bundles, covered with sheets or bags wet in 5 per cent carbolic acid solution, and thrown out of the windows rather than carried through the halls or other rooms. Such clothing should be soaked in a 3 per cent solution of carbolic acid for two or more hours before washing with hot soapsuds, followed by boiling in 1 per cent soda solution. Pillows and mattresses should be covered with sheets wet in 5 per cent carbolic acid solution and sent

to the steam sterilizer, except in case of smallpox, when they must be burned. Books and children's playthings which have been in the room during the infectious illness should be burned, as it is not possible, either by sulphur or formaldehyde fumigation, to render them safe. Wrap them also in old cloths wet with 5 per cent carbolic acid and have them carried directly to the furnace, never allowing such bundles to be put down after leaving the room until they are in the burning furnace. Rugs or carpets may be wrapped in sheets wet with 5 per cent carbolic acid solution and sent to the steam sterilizer, as no fumigation will render them safe. Walls, woodwork, windows, and floors should be washed with bichloride of mercury solution 1-1000, or boiling 5 per cent solution. The boiling soda solution is especially practicable for wooden floors, and should be applied several times at intervals before the floor is regularly scrubbed. The soda dissolves much of the dirt which has accumulated in the cracks from dust and previous washings; there is no doubt more danger in this one point than in any other part of the room. When the walls are papered, the paper should never be scraped when dry, but kept wet until all is removed.

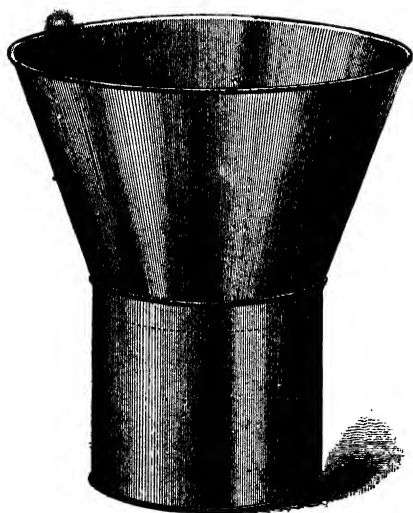
Fumigation with Formaldehyde Gas.—Disinfection with formaldehyde is considered much more efficacious than with sulphur and is accomplished by heating a 40 per cent solution known as formalin, which produces a colorless irritant gas.

Two especially designed lamps, the Schering and Lentz, are commonly used for this purpose, both of which are accompanied by definite instructions as to their use, but both are designed for the disinfection of

small areas, and a more recent method has been advocated by several state Boards of Health, which is as simple as the use of sulphur, and may be easily multiplied to disinfect any given space.

For each 1000 cubic feet of space at $60^{\circ} + \text{F.}$ use
 Formaldehyde (40 per cent), 16 ounces
 Potassium permanganate, $6\frac{3}{4}$ ounces

For the above amount a vessel holding at least twelve



DISINFECTING APPARATUS.

Height, $15\frac{1}{2}$ inches; height of lower portion, 8 inches; diameter at top, $17\frac{1}{2}$ inches; diameter at base, 10 inches. Made of bright tin and covered with asbestos paper, the bottom double tin with asbestos paper between.

quarts is necessary, as the mixture of the two chemicals produces great frothing.

A generator devised by the Maine State Board of Health is recommended for hospital use, but an ordinary tin milk pail with a flaring top will answer the purpose if care is exercised regarding its proper size. The asbestos covering of the generator serves to effectively

retain the heat which is generated by the vigorous chemical reaction occurring in the generator and which is essential to the liberation of the gas.

If the milk pail is used, it may be set in a wooden bucket which fits snugly, or it may be closely wrapped

in asbestos paper or two woolen blankets fastened tightly about it, or any other device which serves to retain all possible heat in the generator.

The room is prepared as for sulphur fumigation as above described. The permanganate of potassium, $6\frac{3}{4}$ ounces to each 1000 cubic feet, should be first put into the generator and the formaldehyde (40 per cent) solution, 16 ounces for each 1000 cubic feet, should then be poured over the permanganate of potassium. As the vigorous chemical reaction liberates an immense volume of formaldehyde gas, it is essential that all preparations should be complete before combining the two chemicals, that the nurse may leave the room immediately and promptly seal the exit.

The room should be closed at least six hours.

The cleaning of the room and its contents should be the same as in sulphur disinfection.

CHAPTER XIII

ASEPTIC TECHNIQUE IN NURSING

COLLATERAL READING: *Aseptic Surgical Technique*, by Dr. Hunter Robb; *The Story of Germ Life*, by Prof. H. W. Cohen, pp. 171-175.

It is usual for pupil nurses to receive their training in the operating room during the latter part of the second year prior to the obstetric and contagious training, because a first-year nurse cannot be expected to ~~acute~~ ^{perceive} nor understand the elaborate detail of the operating-room technique. But from the very beginning there is the necessity for a nurse to practice aseptic methods.

Even so commonplace a duty as the daily dusting should be done in a way to minimize the danger from the dust to the patients and the nurse herself.

It is not an uncommon criticism that some nurses show a tendency to ignore aseptic methods outside the operating room. The handsome arrangements of marble, nickel, and glass in the hospital operating rooms certainly are an inspiration to do fine work, but the homely routine duties in the wards and lavatories mean as much to the welfare of the patient as the more spectacular work in the operating rooms.

There is in the nursing of the simplest cases certain duties which require as careful attention to aseptic technique as any which may be performed in the operating room.

The methods employed in catheterization, in giving

hypodermic injections, in hypodermoclysis, in dressing blisters or bed sores, in preparing patients for aspiration, in applying the perineal pad in gynecological or obstetrical cases, in caring for the nursing mother's nipples, in dressing the new baby's cord or cleaning its eyes and mouth, in douching any wound or cavity of the body, all demand the most careful attention to every detail, and it is with this daily routine work at the bedside the junior nurse must first concern herself.

Contact Infection. — Dr. Albert Ochsner, a well-known surgeon, recently wrote for the medical profession: "My observations have convinced me that the only form of infection which must be considered in surgery is contact infection. This is due to the introduction into the wound of septic material from unclean hands, instruments, sponges, or dressings, or from speaking or breathing into the wound.

"It is such an easy matter to make instruments, sponges, sutures, and ligatures aseptic that there only remain the hands to account for. These can be made clean without difficulty and kept clean with proper attention, but it is this part of the system which is more frequently lame than any other. Everything that is to come in contact with the wound, the hands included, is usually clean when the operation is begun, but it is quite another matter to keep these clean throughout the operation, unless every one connected with the operation learns to concentrate his attention upon the work at hand."

The above was written for surgeons, but is equally applicable to nurses, stating concisely the one great point which should guide the nurse in the details of nursing in all diseases.

Whether the work be the giving of a hypodermic injection or assisting at a major surgical operation, the danger of "contact infection" is the same.

To sterilize and disinfect sponges, hypodermic syringe and needle, the patient's skin and the nurse's hands, one at a time is as Dr. Ochsner says "not so difficult," but to keep them from contact with anything which is not equally clean is quite another matter and can only be done by infinite patience and concentration upon the work at hand coupled with a good conscience which forbids slipshod work.

The young nurse must first learn to care for her hands for her own protection.

The various methods advised and employed in all hospitals for making the hands aseptic all agree in one point; namely, that the prolonged scrubbing with hot water and soap, using a brush, is the most important step in the process.

Cleaning the Hands. — The usual directions read: (1) Keep the nails short and clean; (2) Scrub with hot water and green soap for five minutes; (3) Clean the nails and scrub again; (4) Rinse off soap with warm sterile water, rubbing with a piece of sterile gauze; (5) Immerse in bichloride of mercury solution 1-2000 for one minute, followed by strong alcohol.

These directions vary to a considerable degree, but when any one of the methods advocated is executed with care, all are good.

The easy matter is to clean the hands and the difficult part is to keep them clean, especially when performing bedside duties, such as catheterization.

Ward Utensils. — It is far more difficult to arrange

for and keep clean the utensils, dressings, and instruments needed in the wards than it is to properly care for them in the operating room or regular dressing room. For instance, unless extraordinary care is exercised the surgical basins needed for minor dressings or catheterization in medical wards are used for many other purposes. These basins should be of distinctive size and color and be kept in a special place. To use them for baths or any such purpose should be regarded as a grave offense upon the nurse's part.

Common Mistakes. — The practice of dipping the fingers into the supply of vaseline or other emollients, into liniments, into the utensils containing sterile catheters and douche points, is a common mistake.

Every dressing table and medicine closet should be provided with long dressing forceps which stand handles upward in tall wide-mouthed bottles containing some antiseptic solution, such as 3 per cent carbolic acid. These forceps should be used to lift sponges, catheters, and douche points from the cans, bags, or bottles, in which they were sterilized, without touching them with the hands.

In performing these duties, the fear of "contact infection" should guide every step in the process. The young nurse doing it for the first time should have each step fully explained and demonstrated, but later she must be guided by a good conscience. When abscesses follow the use of the hypodermic, or cystitis follows catheterization, the nurse has either been ignorant of aseptic methods or willfully negligent.

When a patient who has been catheterized for weeks contracts cystitis after one catheterization upon a change of nurses, the occurrence speaks volumes..

The directions given in the chapter on disinfection regarding the care of utensils and clothing in typhoid fever and all contagious and infectious diseases should always be carried out with scrupulous attention to the minutest detail, particularly not forgetting the nurse's hands. In caring for a number of sick patients the nurse commonly carries with her a small covered glass jar containing a mouth wash and mouth sponges. This jar should never be dipped into with the fingers. It may be readily seen how dangerous such a practice would be, especially in cases of typhoid fever and all contagious and infectious diseases. The sponges, of which the supply should be abundant, should be lifted from the jar with a forcep, any surplus solution being squeezed out into the wash bowl and not back into the supply jar.

In caring for the eyes the same precautions should be observed.

It is greatly to be regretted that one must admit there have been hospitals in existence which made a practice of using the same water a number of times for tubbing typhoids, and in the children's wards bathing several patients in the same water.

That such a custom has been carried on with the knowledge of medical men does not excuse it, and aside from the danger of infections of all kinds the repulsive lack of common cleanliness should condemn it.

Cleaning the bath tub should be as carefully done as cleaning a surgical basin, and while we cannot boil or otherwise sterilize the tub, we can, with soap, hot water, and a scrubbing brush, actuated by diligence and a good conscience, make the tub clean and wholesome.

The use of nightgowns, towels, wash cloths, sheets, or other bedding from one patient to another should also be strictly forbidden as a dangerous practice.

Preparing the Field of Operation. — Besides preparing the skin for the use of the hypodermic needle, for blisters, for wet cupping, and for aspiration, the first-year nurse is usually taught to prepare surgical patients for operation.

This preparation of the "field of operation" is one of the most important links in the chain of aseptic technique.¹

Before beginning the preparation a thorough cleansing bath should be given to the patient, washing the hair if necessary.

The bath should be given with vigorous friction and plenty of soap and hot water, followed by a warm or cold shower if the patient is able to go to the bath room; if not, a sponge bath should follow the scrubbing to remove all the soapy, unclean water. The field of operation is then scrubbed again with hot soapy water and a brush and the parts shaved. Shaving is a rather difficult procedure for a beginner, but can be easily mastered by practice.

The razor should be well sharpened, which is usually better done by an orderly or some person accustomed

¹ **TEACHER'S NOTE.** — Printed or typewritten directions for the preparation of patients for operation should be posted in the proper places for reference by the nurses. Details for each case, such as breast, mastoid, abdominal, hand, foot, etc., should be given in full together with the especial orders of individual surgeons. Nurses should not be taxed with memorizing any great amount of such detail.

to its use. There should be an abundance of lather and great care taken not to cut the skin.

In shaving the abdomen or any part where the skin is loose and lying in folds it must be stretched and smoothed out with the left hand.

The object of shaving is to remove all of the hair as closely as possible and it is therefore necessary to pay particular attention to the fine downy hairs which can only be seen by stooping and looking across the skin. When shaving at night, by putting a candle at the far side of the patient and looking across one may easily see if all the fine hairs have been removed.

After the shaving is done, great care must be taken to wash off all of the loose hairs with clear water. The skin is then scrubbed with equal parts of alcohol and ether. This is sometimes followed by the application of a green soap poultice for an hour or two, followed by a scrubbing with hot water and a brush and this in turn followed by the application of from four to six layers of sterile gauze wrung out of a solution of bi-chloride of mercury 1-1000, held in place by a bandage which is not removed until the patient is taken to the operating room.

When the nurse arrives at the point where the preparatory dressing is to be applied, she should disinfect her own hands before applying the gauze, and in covering the part be very sure that a sufficient area has been covered, that the dressing is not too wet, and that the bandage fits closely with no danger of slipping and exposing the part which has been prepared.

Caution must be taken to avoid soiling the bandage and dressing when giving the final enemata or douches

and catheterizing. Should this occur, a fresh dressing and bandage should be applied immediately, no patient ever being sent to the operating room with a soiled dressing or bandage.

The orders for preparing patients for operation vary with different hospitals and different surgeons, the tendency being to simplify the methods. Several well-known surgeons do not use any preparatory dressings whatever, the field of operation being scrubbed (without a brush) and shaved and the final disinfection of the skin done after the patient is put upon the operating table.

Likewise the orders regarding diet, laxatives, and enemata vary from the simplest to those which are extremely complicated.

With the various methods, the nurse needs only to concern herself in carrying them out as ordered.

Male patients should be prepared for operation by orderlies or house doctors.

There are some points to be remembered in preparing patients for operation which do not come strictly within the lines of aseptic technique, but seem timely enough to be mentioned in connection with this procedure.

With a patient about to undergo a very serious operation, who is prostrated by pain and weakness, it is well to have a rest of two or three hours between the cleansing bath and the preparation of the field of operation.

In the matter of diet, where the order is left designating liquids only, it is well to avoid giving milk during the four hours preceding the operation, as digestion is often disordered by the nervous dread of the operation and the vomiting of curdled milk during the taking of an

anæsthetic is dangerous. Hot broth, tea, or coffee may be given instead.

In preparing the patient for an abdominal operation, the greatest care should be taken to avoid undue exposure.

The extensive field to be shaven takes much time to do properly, but does not necessitate keeping the patient lying uncovered for an hour or two.

After the abdomen and pubes have been shaven, they should be covered while the vulva and skin surrounding the anus are shaved.

In the hottest summer weather a sick patient will shiver with cold when the abdomen is exposed, besides becoming extremely nervous and overwrought by unnecessary exposure.

In scrubbing the field of operation, the water should be hot, not lukewarm, and the nurse carefully avoid dripping hands, brush, or dressing upon the skin or clothing of the patient.

Preparing Surgical Supplies.—During the junior year, the making of surgical supplies constitutes a part of the nurse's training and here she learns exactitude and economy as well as the detail of the manifold requirements for surgical work in the operating and dressing rooms.

During this period she should embrace every opportunity to learn and fix in mind the name and purpose of all sponges, dressings and bandages of every description, going on later to surgical apparatus and instruments. Months later she will go into the operating room to receive her training, and all the information she carries with her will increase her usefulness and her understanding.

The earlier nurses realize that their classes and lectures are only guideposts, directing them to the paths where an untold wealth of information lies waiting to be absorbed, the better nurses they become.

The enormous detail concerned in all surgical work can only be grasped by long experience, but the principles which govern it must first be understood, and the nurse who intelligently and conscientiously gives a hypodermic injection has not far to travel until she becomes an excellent surgical nurse.

CHAPTER XIV

CARE OF THE DEAD

WHEN family or friends are present with a dying patient, the nurse should be especially careful to be as unobtrusive as possible in carrying out any orders or performing the last necessary duties.

A fussy, managing type of nurse is a sore trial to a family under such circumstances, and while it is usually necessary for the nurse to be in the room or within call, she should be as little in evidence as possible.

A reverent, respectful demeanor should be observed, whether the patient be possessed of many friends or is a homeless object of charity.

A room or ward where a dead body lies is not the place for talk of any kind outside of what concerns the care of the dead. Two nurses working together at such a time should never take the opportunity to discuss their own or other's work and affairs. When death occurs, the family or friends should be left alone for a reasonable, respectful time.

If the patient was a woman or child, the nurse prepares it for the undertaker. If the body is that of a man, the orderly does this work.

The eyes should first be closed and covered with a small layer of absorbent cotton wet with alcohol. The arms and legs should be straightened. If the body is brought down far enough in the bed to brace the feet

upright against the foot of the bed, the shoes will go on much easier.

To prevent discoloration of the face keep the head and shoulders higher than the body, by using two pillows. Avoid turning and handling as much as possible. Pack the rectum with cotton, give the entire bath except the back and comb the hair before turning the body.

A roll of cotton covered with a towel and placed under the chin will keep the lower jaw in place. Never use a bandage for that purpose.

A towel folded lengthwise should be pinned around the ankles after the bath.

The clothing to be used is decided upon by the family or the custom of the hospital, but the underclothing should always be put on before the undertaker takes charge of the body.

Every state and city has laws governing the disposal of bodies dead from contagious or infectious diseases, stillbirths, cases which come under the jurisdiction of the coroner, and for transportation by rail or boat.

These regulations of the state in which she resides should be thoroughly understood by every nurse.¹

¹ **TEACHER'S NOTE.**—A printed copy of the laws governing the disposal of the dead should be posted in every class-room.

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